All Things Digital

Amateur Radio for the 21st Century

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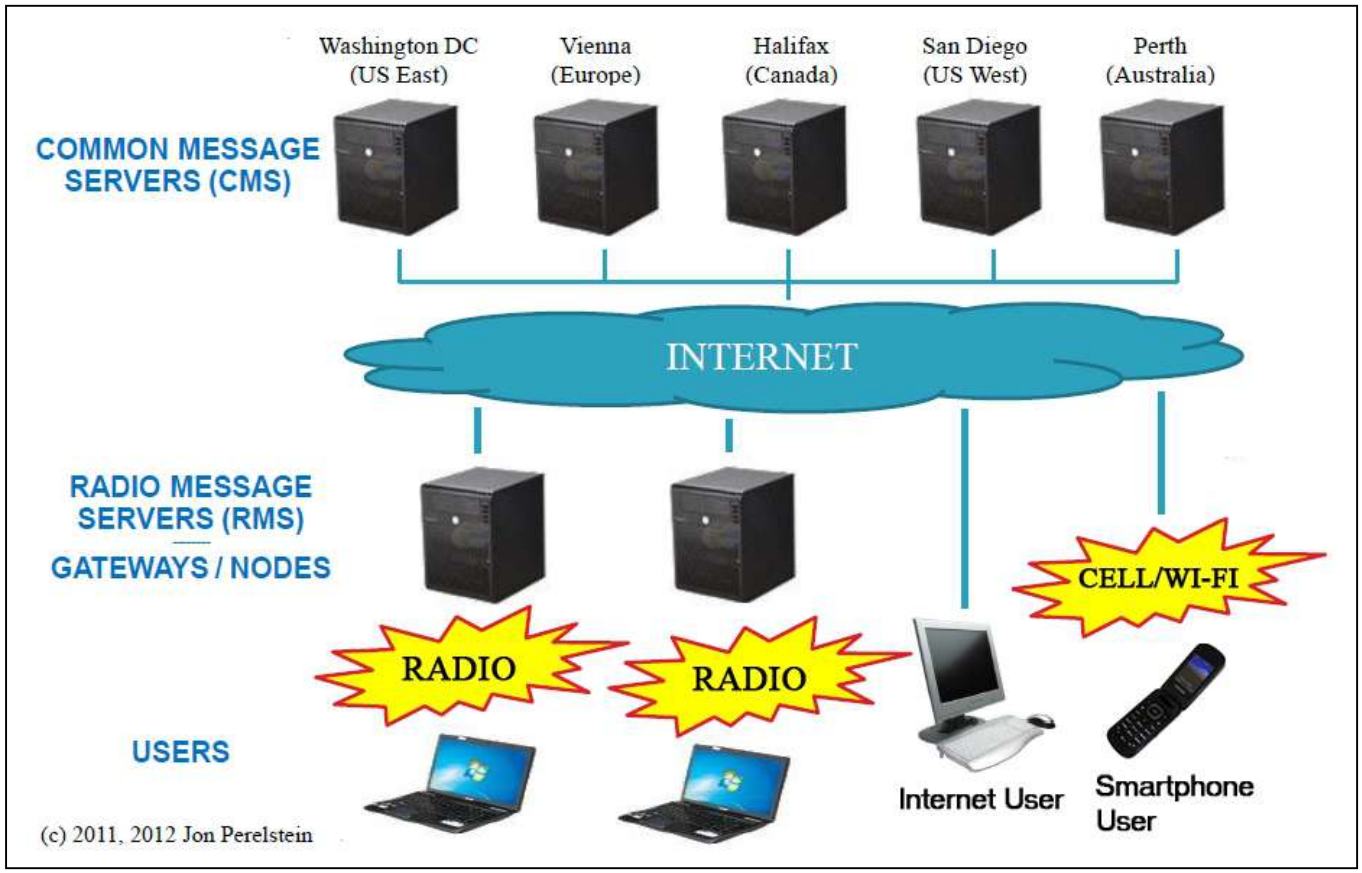
THE WINLINK 2000 (WL2K) GLOBAL RADIO EMAIL SYSTEM

Would you like to be able to send and receive messages from almost anywhere in the world when commercial services aren't available? Well, thanks to Amateur Radio and the WL2K system (Figure 1, next page) you can! Hams, other agencies and groups volunteer their services, expertize and equipment to setup and maintain (and use) what are called RMS (Radio Message Server) gateways (or nodes) on VHF/UHF/HF radio, and these are connected via the Internet to world-wide CMS (Common Message **S**ervers).

Digital radio modes supported are: VHF/UHF packet radio (soundcard or hardware based) [1]; HF WINMOR protocol via soundcard, and HF PACTOR (using proprietary hardware). A lesser known and used feature is the integration with the commercial cellular phone system which has dedicated packet radio channels for moving digital data even if voice channels are jammed or lost (which usually happens in major disasters), and you can send/receive cellular phone text messages to/from the WL2K system with your smartphone. The free user software (Paclink, Airmail, and RMS Express) runs on all Windows platforms (XP and later).

[1] *Jim Muli, W2YG, has written a soundcard packet radio interface for RMS Express which allows you to use AGW PE, UZ7HO SCM (soundcard modem), or the new Dire Wolf APRS soundcard packet engine.*

FIGURE 1: WINLINK 2000 SYSTEM OVERVIEW



WL2K AND ME

My overall preference is to use soundcard based packet radio for APRS and WL2K. You can use both "obsolete" and new software/hardware to access either system. All you need is a computer, plus VHF (or HF) transceiver, antenna(s), and a soundcard-radio interface (Figure 2).

FIGURE 2: BASIC PORTABLE WL2K RADIO EMAIL MESSAGING SYSTEM

Today, more Hams are using soundcards for digital radio modes on HF which eliminate the old hardware multi-mode TNCs (Terminal Node Controllers), so if you are a digitally enabled HF Ham you already have everything required to use the WL2K system! While only Hams and other supported agencies and groups can have personal WL2K radio/email accounts (callsign@winlink.org), third 3rd party traffic rules apply (in Canada and the U.S.) so non-WL2K parties can send/receive messages since these are rerouted automatically (by the CMS) from/to the Internet and/or cellular based systems, which is totally transparent to the user! However, the system is primarily intended for EmComm use or as an alternate communications method when conventional services aren't available, and you can't use the system for commercial or frivolous purposes because standard Amateur Radio rules and regulations apply.

Example: My camp is within VHF range of Thunder Bay using 10 watts and small beam, but there's no electricity, landlines, Wi-Fi, running water, etc., so Ham Radio (using battery/solar power) is the only way for me to communicate with the outside world. If a family member needs to contact me, they send an email to my regular email account which is programmed to forward specific emails (text only) to my WL2K email account which I can access via radio and send a reply back to the originator, if required.

APRSLINK AND WL2K

In Canada (any many other parts of the world) RMS Packet Gateways aren't as numerous as they are in the U.S., but there is a very extensive APRS network and the WL2K system supports it with APRSLink. If you use APRS, you already know how to send SMS (Short Message Service) type emails (via EMAIL-2), but APRSLink allows you to send multi-line text emails to WLNK-1 using the SP message command, and your APRS position information is automatically added to the text so the recipient knows from where you sent the message (Figures 3 and 4, next page). You can also access the WL2K and check for any messages for you, nearby RMS gateways, etc. All you need is a nearby APRS Internet gateway (I-Gate) to act as the "go-between" between your APRS station and the WL2K.

Note: Some ARES groups are combing RMS gateways with APRS I-Gates using 144.390 MHz as the common frequency for both services because this avoids building separate systems in the same areas with limited Amateur Radio resources.

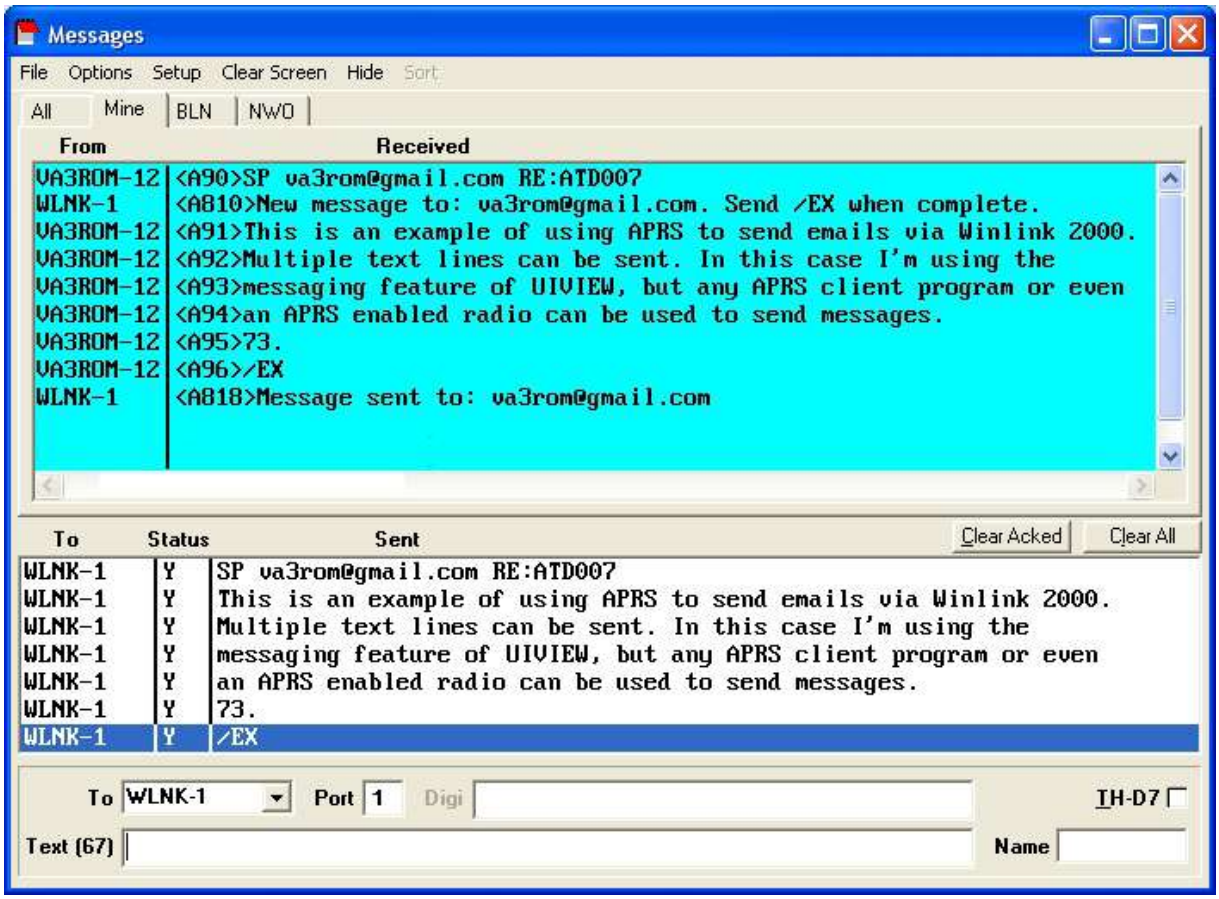


FIGURE 3: USING APRSLINK TO ACCESS THE WL2K SYSTEM

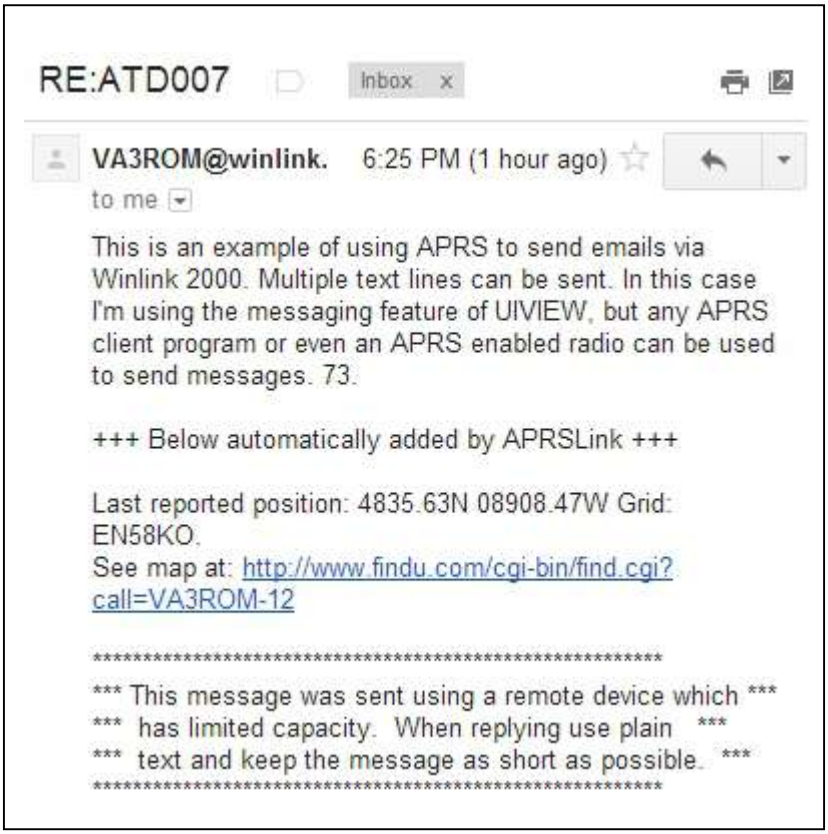


FIGURE 4: RECEIVED EMAIL SENT VIA APRSLINK

PACKET RADIO PROGRAMS AND WL2K

In Figure 5, I'm using WinPack but any terminal program will do to send packet radio text emails to regular email accounts (using the SP command), plus short text messages (SMS) to cellular phone users (I've masked my number in the example). WinPack won't run on Windows 64-bit systems and only supports AGW PE, but you can use the free Paxon terminal program as a replacement and it supports both AGW PE and UZ7HO SCM (there are many others you can use). The difference between this method and using APRSLink is that you must be able to connect directly with an RMS gateway. In this example, packet radio station VE3VBA connects to RMS gateway VA3ROM-10 via radio (145.010 MHz), then VA3ROM-10 gateway connects via the Internet to the Halifax CMS (or any other available CMS). Most RMS gateways have 24/7 Internet connections, but when and if this link is severed they automatically operate in store and forward messaging mode until the connection is restored).

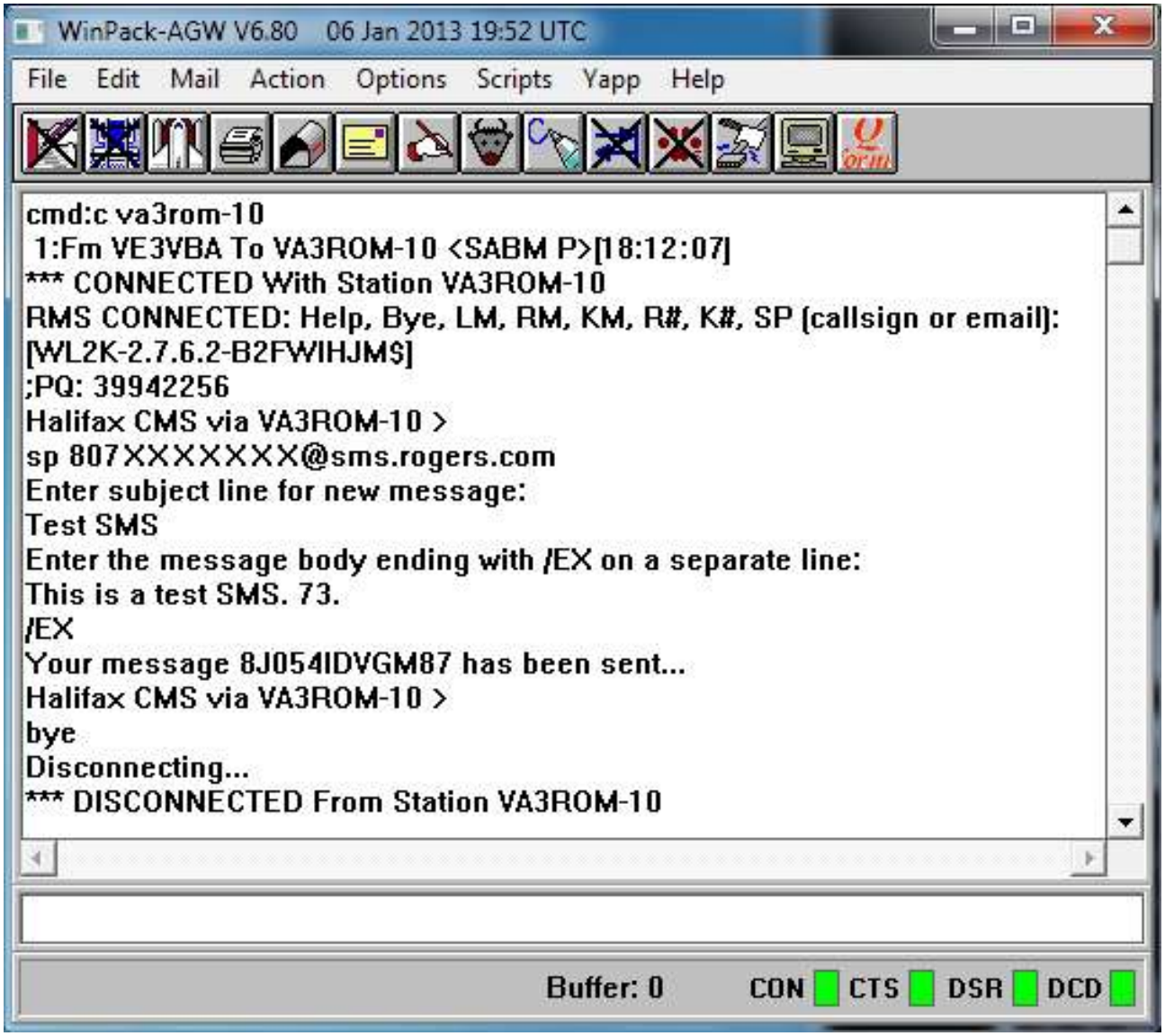


FIGURE 5: USING A PACKET RADIO PROGRAM TO SEND SMS

SMARTPHONES AND WL2K

My smartphone SMS address is its 10-digit phone number@sms.rogers.com , and since most people use their smartphones for everything and take them everywhere (even to bed!), it's often best to send important message directly to that device to ensure you reach the other party ASAP; then they can easily reply back (or originate any new messages) to the WL2K originator without having to know anything about the WL2K system! Other cellular service providers have their own SMS @ addresses, and these can be found on the Internet or by asking your cellular service provider (most Internet lists are not current).

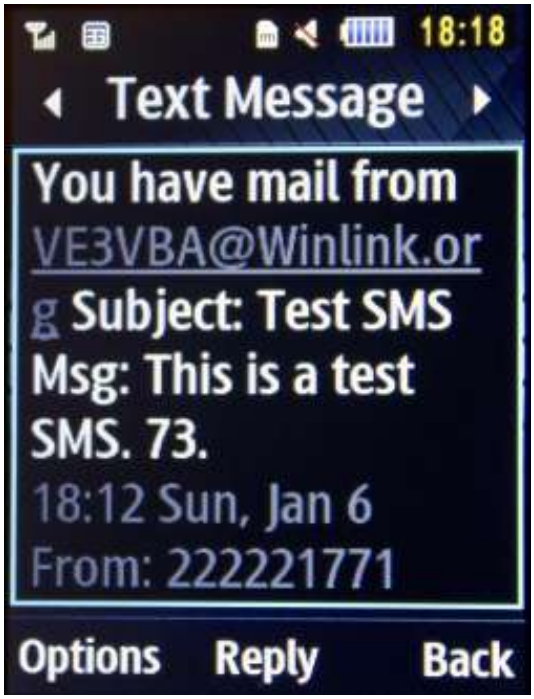


FIGURE 6: SMS RECEIVED

Note: For example, when conducting an ARES phone tree callout, why bother dialing each member's phone number separately and passing a voice message (over and over)? Why not send one SMS batch email (via an email client program or RMS Express) directly to their smartphones, instead? You may only have a few minutes (or less) to get the word out before commercial system comes crashing down and you are cut off!

MY FINAL

Well, if I've piqued your interest why not give 21st century WL2K packet radio messaging a try? I recommend RMS Express because it has the HF soundcard WINMOR protocol, and now soundcard packet radio support with the new AGW Express interface (thanks to Jim, W2YG).

In the next column, we'll look at something I used daily with my old job in the Canadian coast guard called AIS (Automatic Information System), or "high-speed APRS for ships", and many Hams send AIS data to the Internet for others to enjoy, too! Mariners, who may also be Hams, can now take advantage of both tracking systems plus WL2K! —73

REFERENCES AND RESOURCES

AGW Express Interface	http://w2ygsoftware.com
AGW PE	http://www.sv2agw.com/downloads/default.htm
UZ7HO SCM	http://uz7.ho.ua/packetradio.htm
APRSLink	http://www.df8ls.de/documents/APRSlink.pdf
APRS Email System	http://www.aprs-is.net/Email.aspx
Paxon Terminal Program	http://www.paxon.de/download.html
RMS Express	http://www.winlink.org/ClientSoftware
RMS Station VA3LKI/VE3LKI	http://www.qsl.net/ve3lki/RMS/index.html
Short Message Service	http://en.wikipedia.org/wiki/SMS
Soundcard Packet Radio	http://www.soundcardpacket.com/index.html
Winlink 2000	http://www.winlink.org
WL2K System Information	http://www.winlink.org/RMSChannels

VHF and Packet Radio With a Focus on EMCOMM
http://www.va3rom.com/docs/VHF Packet Radio.pdf

WL2K and WINMOR Radio-Based E-Mail
http://www.va3rom.com/docs/WL2K and WINMOR.pdf