

Winlink for ARES

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Editor's Note: The concept of using Winlink 2000 on a national basis is under consideration by the ARRL Board of Directors and the ARRL Ad-Hoc Committee on ARES Communications.

Listen to your Customers!

To be an effective and valued service, Amateur Radio Emergency Service (ARES) volunteers must first listen and respond to their "customers" or served agencies. Such "customers" may include community hospitals, the Red Cross, and other public safety and disaster relief agencies, and especially the local emergency operations center. This, of course, depends on the local area being served.

What do these community served agencies need? Many are now blessed with existing ARES communications, but what do you think they would say if offered an alternate path for e-mail using their *own* e-mail programs on their *own* computers, in their *own* offices without the disruption of other unfamiliar devices? Let's face it, SMTP e-mail is the current medium for written communications, and there is no reason now to attempt to adopt something special during a time when unfamiliarity may be a huge deterrent to their assigned tasks. In Harris County (Houston), Texas, we found this to be a critical need for the agencies we serve.

A Little Background

In May 2002, North West Harris County ARES provided a dozen operators for a two-day "Weapons of Mass Destruction" training exercise involving county and state governments, and the Port of Houston. This functional exercise was developed and conducted by the Texas Engineering Extension Service's National Emergency Response and Rescue Training Center (NERRTC) to enhance these jurisdictions' WMD incident-management capability. During the exercise, it became crystal clear that ARES must provide a reliable and accurate high-speed digital message capability for communications among the served agencies involved with county emergency management. These communications would contain highly detailed instructions and sensitive information requiring wide, yet controlled, dis-



Planning Coordinator David Roth (left), and Community Liaison Rusty Cornelius of Harris County Emergency Management enjoying the benefits of the Harris County ARES and Winlink 2000 at the Harris County Emergency Operations Center.

tribution, as well as being archived as permanent records. Ideally, such communications would seamlessly integrate into these agencies' already existing e-mail systems.

A steering committee was formed to identify and evaluate existing Amateur Radio packet radio programs, and recommend an optimal system to meet our requirements. After considering many general purpose and specialized packet terminal programs, the committee learned that the Winlink 2000 system with its flexible client programs, Paclink for VHF/UHF packet, and Airmail for HF PACTOR were both very effective, and exist as a part of a greater network configured system that is now used daily to transfer thousands of messages between radio and the Internet.

In January 2003, the Winlink 2000 Telpac VHF/UHF packet-to-Internet gateway module was obtained for testing, and three days later NW Harris County ARES had a station on the air with this exciting new program. Telpac is an easily-installed and configured *Windows* program. It provides a bi-directional e-mail gateway between VHF/UHF packet and the Internet via the existing Winlink 2000 network, using Telnet and any available Internet

connection. It may also be co-located on a Winlink 2000 Participating Station (PMBO) to provide local hubbing between users (agencies) with no Internet at all.

Considerable testing of all possible combinations of composing, sending and receiving messages, with and without the use of the increasingly scarce packet networks, continued for several months. We determined that we had what we needed!

The Internet is sufficiently reliable and redundant to be considered by emergency management professionals a valuable adjunct, secure, multi-point, communications network. As long as it functions, those we are serving expect to receive information and resource requests by that route. If the Internet is not available to our served agencies, our Winlink 2000 for ARES system can now provide a system whereby messages can still arrive by traditional packet radio. The solution to meet our customer's needs was within our grasp. All that remained was to physically implement what already exists.

The Plan Goes Public

The digital communications plan for Harris County ARES was prepared in April 2003 by Nelson Livingston, AE5NL,

Assistant EC with NW Harris County ARES. Covering an area the size of Delaware and with 3.5 million inhabitants, Harris County is divided into four ARES quadrants, each with an Emergency Coordinator (EC). In effect, there are four autonomous ARES groups in the county. The digital plan calls for a minimum of two VHF Winlink 2000 Telpac gateway stations in each quadrant, physically separated and operating on different Internet topologies (dial-up, cable or DSL).

The VHF Telpac gateway stations in the northern two quadrants operate on 145.07 MHz, while those in the southern two quadrants are on 145.05 MHz. These frequencies were selected to use the sole remaining G8BPQ packet node in each area, greatly extending the range of low antenna equipped Telpac stations. Depending upon the time of day and day of the week, between five and seven of these Telpac gateway stations are available. With overlapping coverage, from nearly any location in the county, one or more of these gateway stations should be ac-

cessible from anywhere in the county, with or without the use of a packet node.

The implemented plan was extensively tested during the 2003 Simulated Emergency Test, with stations at the county EOC and Red Cross, and portable stations at multiple hospitals. During the test, lengthy SMTP e-mail messages, with attached binary files, were sent between these locations, with 100 percent accuracy, in considerably less time than a simple 20 word radiogram format message could be sent on the voice network. In addition to the speed and accuracy of delivery, all the information was available for further distribution and as a permanent incident record. Needless to say, we made a hit with our served agencies.

Additional plans have been developed to link the county EOC with other key agencies, such as the City of Houston Emergency Center, regional American Red Cross headquarters, and the state Division of Emergency Management regional headquarters with dedicated 9600 baud UHF packet stations using the Winlink 2000

Paclink client program at each location. One Paclink install will serve multiple computers within each agency. In addition, Airmail will be used for HF longer-range communications to out-of-region PMBOs. Equipment grant requests have been submitted and some purchase orders issued for critical hardware items currently donated by ARES members.

Editor's note: This article will continue next month.

References

Winlink Development Team: Vic Poor, W5SMM, Rick Muething, KN6KB, Steve Waterman, K4CJX, Hans Kessler, N8PGR. "Introduction to Winlink 2000," *QST*, Jun 2002, p 31.

"TELPAC—Winlink 2000's New Telnet Packet Bridge," *QST*, Oct 2003, p 39.

"Telpac and Paclink—Streamlined AX.25 Packet Radio Server and Client for a Full Service Ham Radio Messaging Network," ARRL/TAPR Digital Communications Conference, Sep 2003.

Check these Web sites or e-mail groups for additional information and resources:

www.winlink.org, www.airmail2000.com, groups.yahoo.com/group/telpac-paclink/, groups.yahoo.com/group/wl2kecomm/