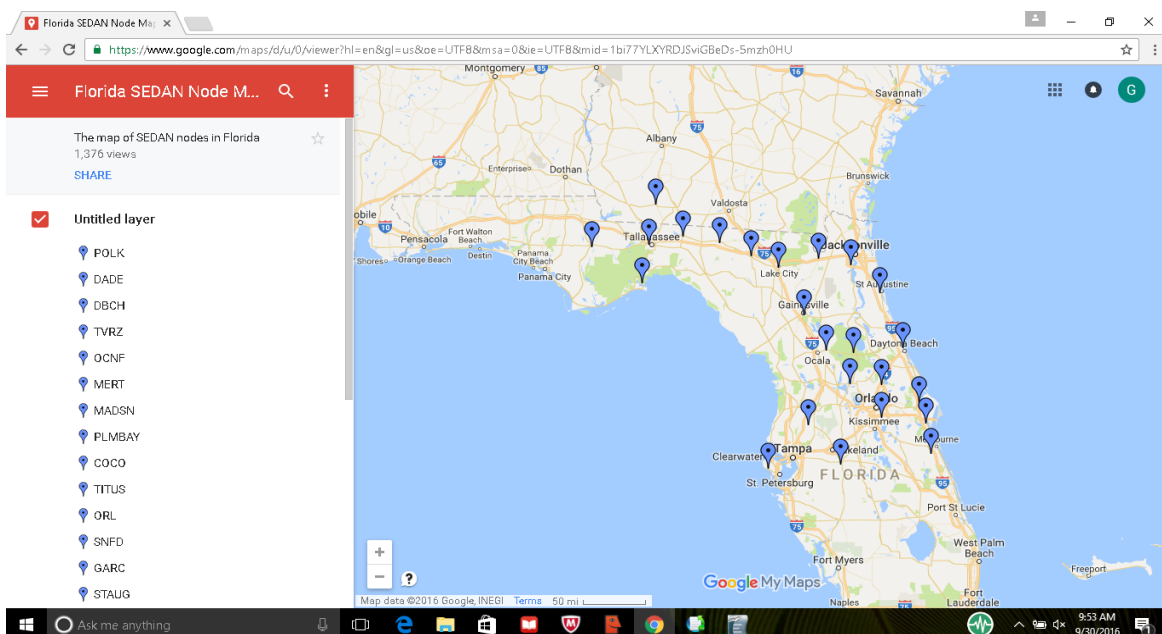


EMCOMM EMAIL OVER RADIO -- WINLINK VIA FLORIDA SEDAN

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In disaster scenarios, normal Internet and email technologies may fail over large regions, as happened during Hurricanes Katrina and Sandy. (<http://www.discovery.org/a/28811> ; <http://www.emergencymgmt.com/disaster/Sandy-Black-Hole-of-Communication.html>) Florida is blessed to have an extensive packet node backbone known as the SEDAN. (<http://www.flasedan.com/index.html>) The nation is fortunate to have a well-established email-over-ham-radio system developed original to provide email & weather to vessels at sea, known as WINLINK. (<http://www.winlink.org/>)

After discussions with Barry Isabelle N2DB, manager of the SEDAN, a WINLINK 2 meter packet gateway KX4Z-10 is available via the SEDAN system. This WINLINK gateway has an on-site associated HF (high frequency) gateway station. That means that email can get easily in and out of the state or region, via SEDAN / WINLINK, *even if all Internet in the region is down.*

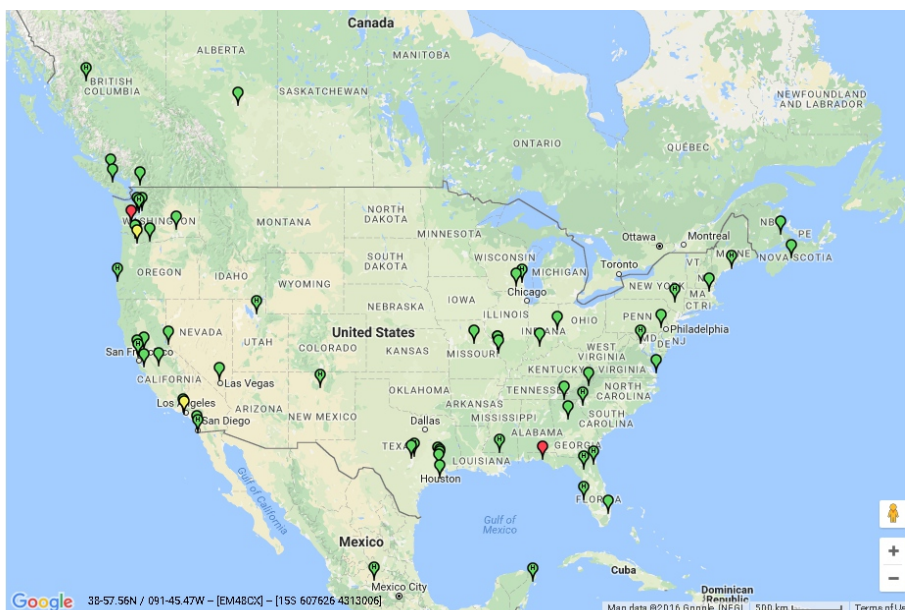


The Florida SEDAN network

Two-meter packet ham operators can link through the SEDAN to the WINLINK station KX4Z-10, via either the Gainesville (W4DFU-7) or (soon) the Lake City (KE4BQI-7) stations, using the “script” option within free client software WINLINK EXPRESS (see below for details). Once connected, email will be automatically uploaded and downloaded.

The KX4Z-10 WINLINK gateway then takes whatever action is necessary to handle the email:

- 1) INTERNET AVAILABLE: email uploads and downloads take place normally over Internet.
- 2) INTERNET OUT > 5 MINS: email is automatically moved by RMS_RELAY to the HF WINLINK station (KX4Z) to enter the queue for transmission. Target stations to whom to deliver the email are determined automatically via propagation software, and may be found within the FCC-allocated automated digital subbands of the 80, 40, 30, 20, and 17 meter bands. Once transferred over HF, the email will be handled appropriately by the distant target station.
- 3) ONSITE EMAIL CACHE: Once a packet station has made a WINLINK email access via KX4Z-10, onsite RMS_RELAY software assigns that callsign within the WINLINK system for collection of incoming email at KX4Z. Email destined for the packet station will be automatically collected at KX4Z-10, so that the next time the packet station makes another connection, their incoming email will be already waiting for them for delivery over the SEDAN.



WINLINK gateway server stations available in the United States. Email from Florida can be routed to any available station from this group for connection to the Internet or further forwarding.

Here's how you actually do this in practice:

Normally, packet operators use keyboard or other means to “connect” to a SEDAN node, then to another, and so on. I’m not an experienced packet operator, but I was able to reach long distances connecting one station after another.

At each node, a series of commands are available, including: (<http://www.fla-sedan.com/sedanhowto.html>)

Connect -- allows you to connect to the next station e.g., “C W4DFU-7” -- the first letter of the command is sufficient. Stations may be specified by their callsign or their nickname

Routes -- shows what connections are available

Mheard -- shows what stations have been received by the station

If you have a basic understanding of these packet node commands, you should have no problem creating a “script” within WINLINK EXPRESS to carry out the same connections automatically.

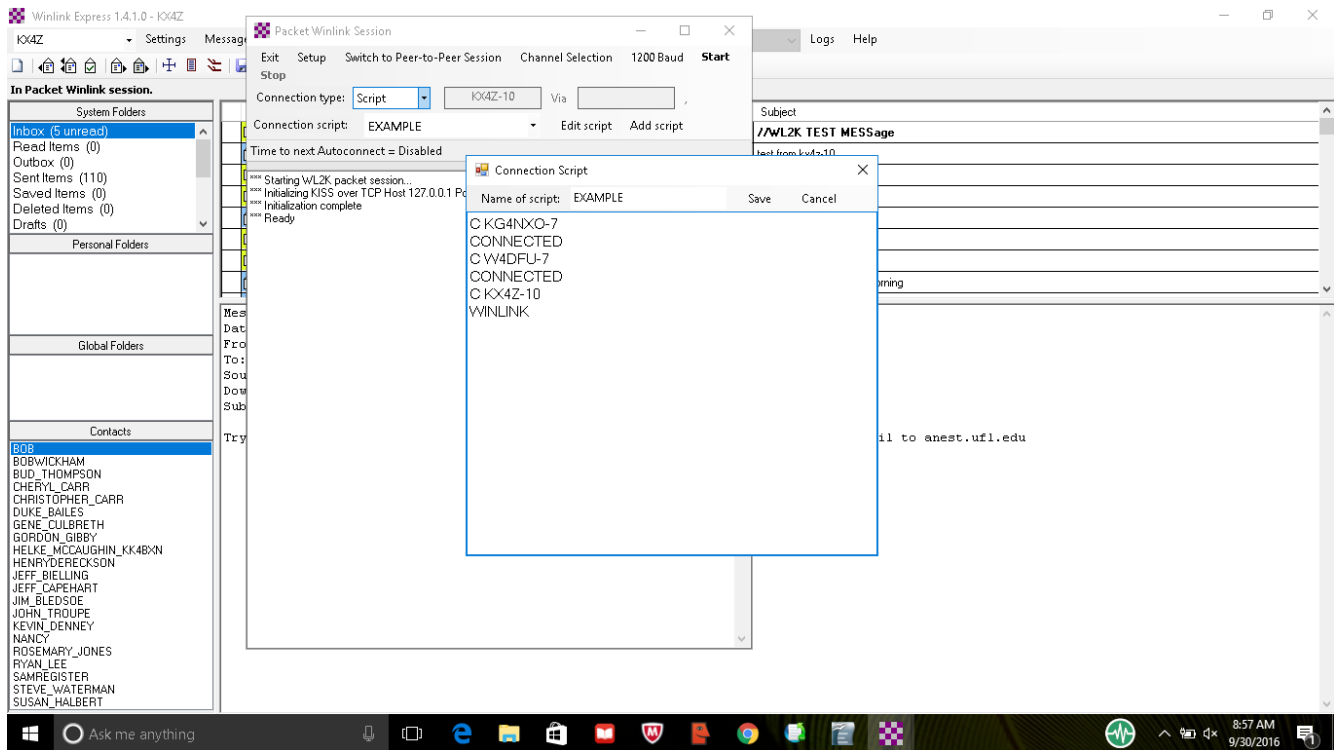


Illustration of Scripts within WINLINK EXPRESS client software.

The illustration shows WINLINK EXPRESS opened, with a PACKET WINLINK session opened and overlying it, and then a script opened for possible editing in the front dialog box.

Scripts consist of command-response pairs of lines.

In this script, the first command is

C KG4NXO-7 instructing a connection be mad to KG4NXO-7 in Ocala (MERT)

followed by a response to be searched for

CONNECTED

When the response is found, the next command,

C W4DFU-7 will be executed, connecting to GARC in Gainesville

then the response

CONNECTED will be searched for,

at which time the final command

C KX4Z-10 will be executed, connecting to the WINLINK server

which amongst its responses will send the word

WINLINK

at which point the script will terminate and the normal logon sequence will automatically follow.

Scripts can be modified as needed, and there may well be a better script than this example for making this connection.

Practice Hams can practice this connection whether or not they have any email in their Outbox to transmit. If there are no messages waiting for your station, and you have no messages to send the system will simply indicate the connection, go through the sequence, and conclude there are no messages to transfer.

Sometimes the disconnect sequence lingers for a long time without actually disconnecting, in which case it is safe to click STOP to exit the connection.

Advantages & Disadvantages

Frankly, most of these ham radio digital systems have limited usefulness during normal times! Cell phones and instant messaging have obviously carried the day. WINLINK is only very useful to precisely the people who have no normal communications--mariners at sea, missionary expeditions, etc. Every month, the WINLINK systems handles tens of thousands of messages. (See http://www.winlink.org/RMSChannels?qt-live_winlink_information=3#qt-live_winlink_information) Of course, like any system, it too can be overwhelmed. If the Internet is "out" in only a region, email will move in and out using gateway stations connecting to other gateways who still have internet access. Although WINLINK includes a system to deal with a nationwide internet outage, throughput via automated stations trying to make hundreds of connections....is not going to be a pretty site.

One site moving data out an Internet-damaged area, to any of multiple possible, largely-unused targets in unaffected regions, will be far faster and more useful. However, throughput on HF is limited by the realities of HF communications, as well as by FCC regulations. However, PACTOR and WINMOR digital are far, far faster than voice alternatives! **Measured throughput** at my station varies from a low of 150 words per minute (multiple small messages) to a high of >1000 words per minute (one large message). Over a 24 hour day, assuming 200 wpm, that reaches 288,000 words transferred..... While pitifully small in comparison to network 10BaseT, this is still a very significant amount of emergency communications in one day. It will be a huge help and complement the human operated National Traffic System.

Downsides to the SEDAN. Will this connection harm the SEDAN? Current usage of the SEDAN network is minimal, and likewise of my 2-meter PACKET WINLINK gateway. Connecting to the SEDAN is unlikely to pose any burden on either system. However, it creates a significant synergism in possible emergency communications usefulness.

Questions? Contact KX4Z@winlink.org.