Webinar

September 21, 2011

ARRL The national association for AMATEUR RADIO

What we are going to cover tonight:

- What is Winlink 2000?

- The many variations of user software

- Winlink 2000 Sysop Software

-Winlink implementation strategy ideas

Winlink 2000: What is it?

At a high level:

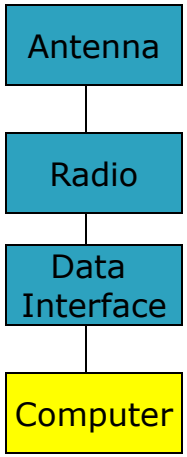
- **Winlink is a system that supports e-mail over radio.**

- **It is used in the amateur radio service, government and non-government DHS Tiered services.**

- **Winlink is free of charge.**

Winlink 2000: What is it?

A typical WL2K user's station is composed of familiar components.



Your computer is equipped with WL2K client software.

Winlink 2000: What is it?

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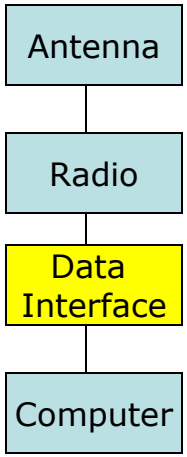

Data interfaces come in several types and radio protocols (modes)

- Multimode controller

- Terminal node controller (TNC)

- Radio modem

Winlink 2000: What is it?

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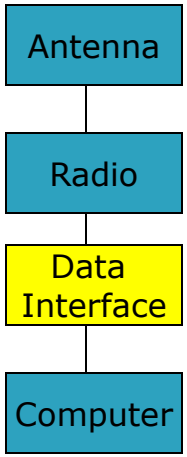


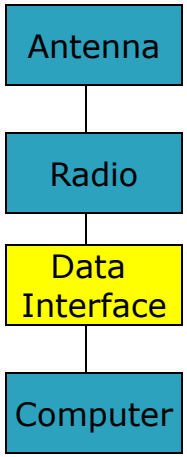
Data interfaces come in several types and radio protocols (modes)

***Packet radio* is a mode used mainly On UHF and VHF with FM.**

***PACTOR* is a mode used on HF for long-distance with SSB.**

Winlink 2000: What is it?

A typical WL2K user's station is composed of familiar components.

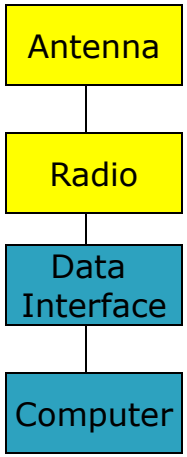


Data interfaces come in several types and radio protocols (modes)

***Computer sound cards* can also be used as a low-cost data interface for a mode called WINMOR, on HF.**

Winlink 2000: What is it?

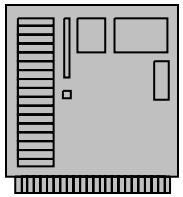
A typical WL2K user's station is composed of familiar components.



Of course, a transceiver and a good antenna are required for connecting with distant gateway stations over the airwaves.

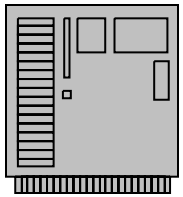
Winlink 2000: What is it?

Perth



CMS

San Diego



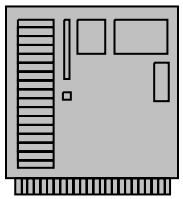
CMS

The WL2K system has redundant, mirror-image servers connected together on the internet.

We call them *CMS* or *Common Message Servers*.

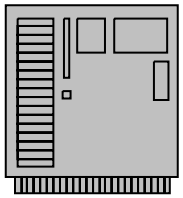
They are located well-apart around the world and *any one of them can easily support the whole WL2K system* if one or more should go offline.

Vienna



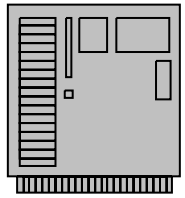
CMS

Halifax



CMS

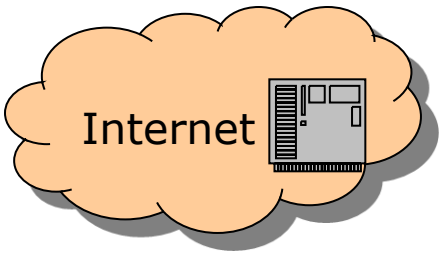
Brentwood



CMS

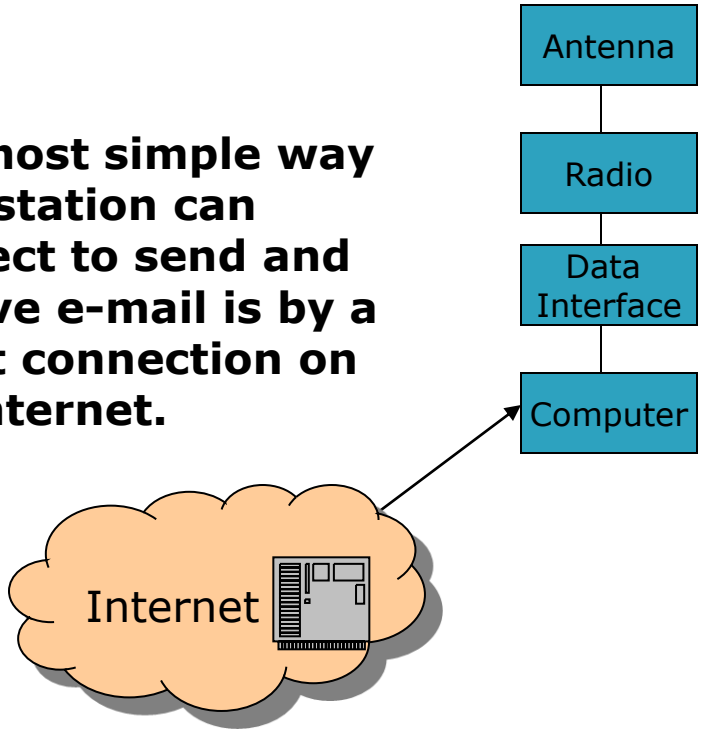
Winlink 2000: What is it?

Since any one can support the whole system, let's simplify the diagram.



Winlink 2000: What is it?

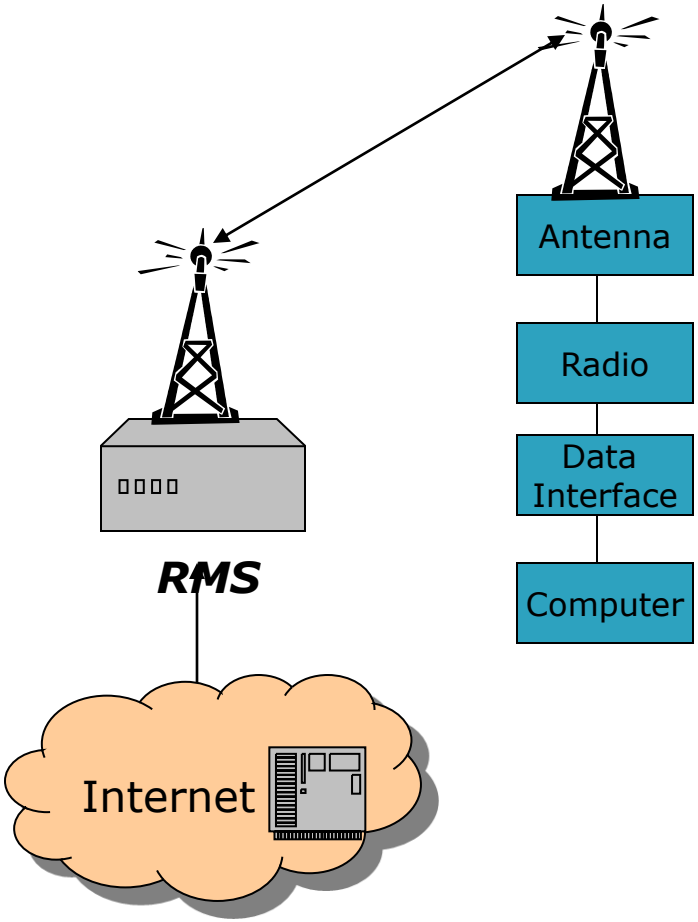
The most simple way your station can connect to send and receive e-mail is by a direct connection on the internet.



No data interface, radio or antenna is needed, but an internet connection and client software is needed.

It makes no difference which CMS site is accessed. If one is offline, another answers.

Winlink 2000: What is it?

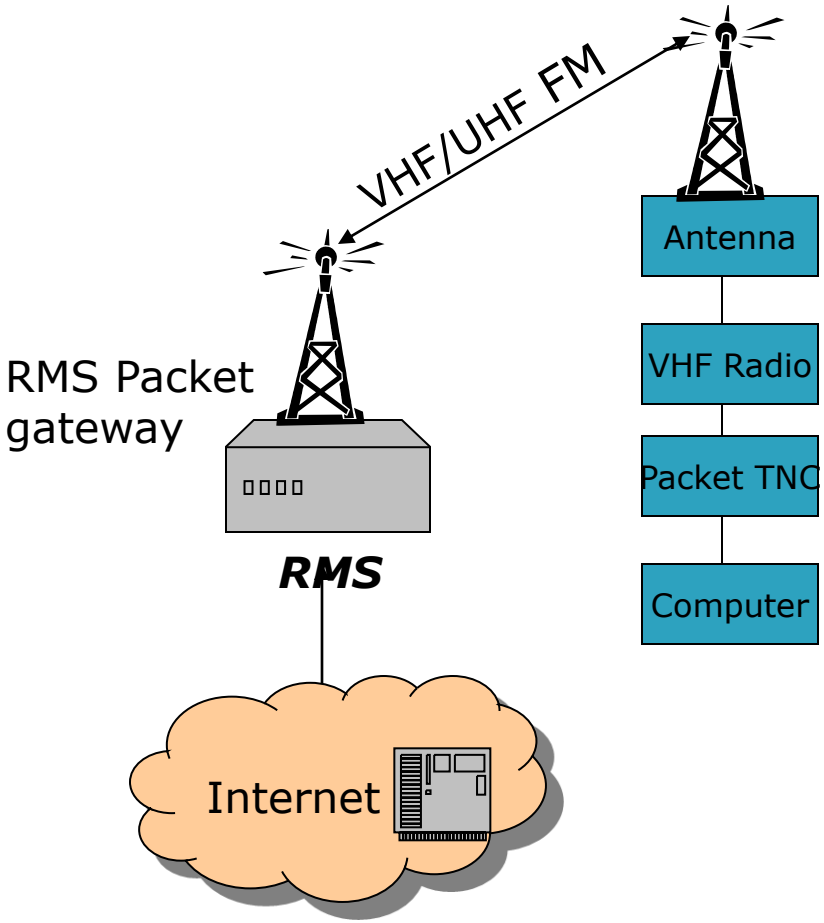


The largest part of the WL2K system is made up of many, many, volunteer *RMS* or *Radio Mail Server* gateway stations.

RMS gateway stations provide a pathway for your station to a CMS using radio connections.

The RMS gateway is connected to the internet and CMS *so you don't have to*!

Winlink 2000: What is it?

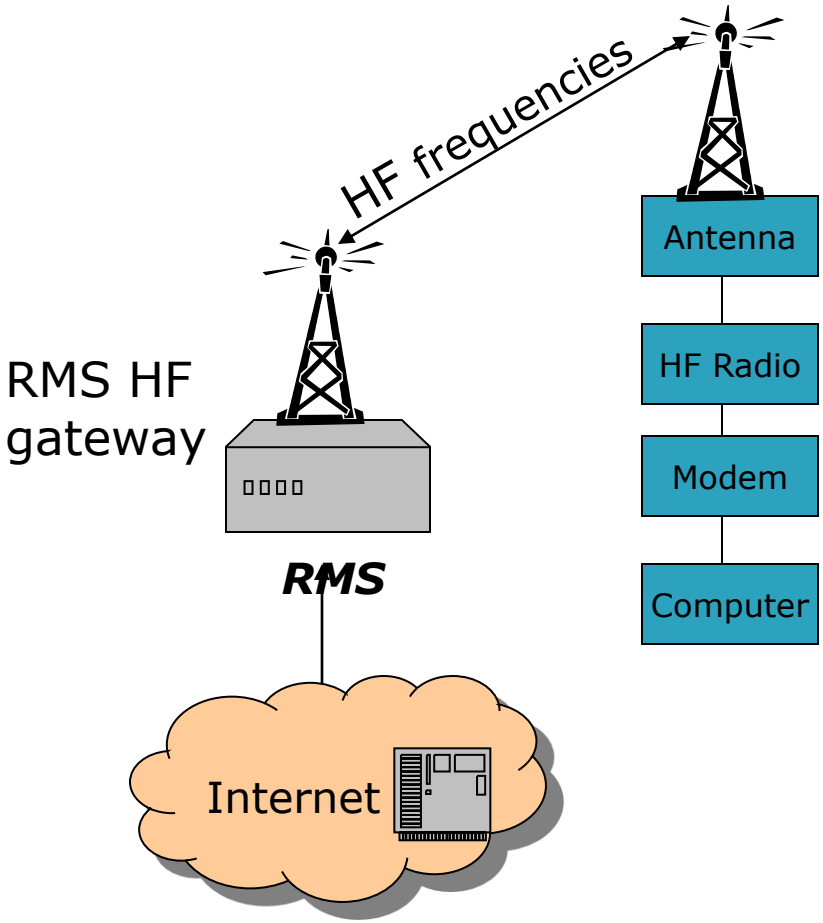


Over short range up to 30 miles, you use packet radio on UHF or VHF FM.

The RMS gateway station you connect with is an RMS Packet gateway station.

If you have a packet TNC and a nearby RMS Packet station you can use this method.

Winlink 2000: What is it?

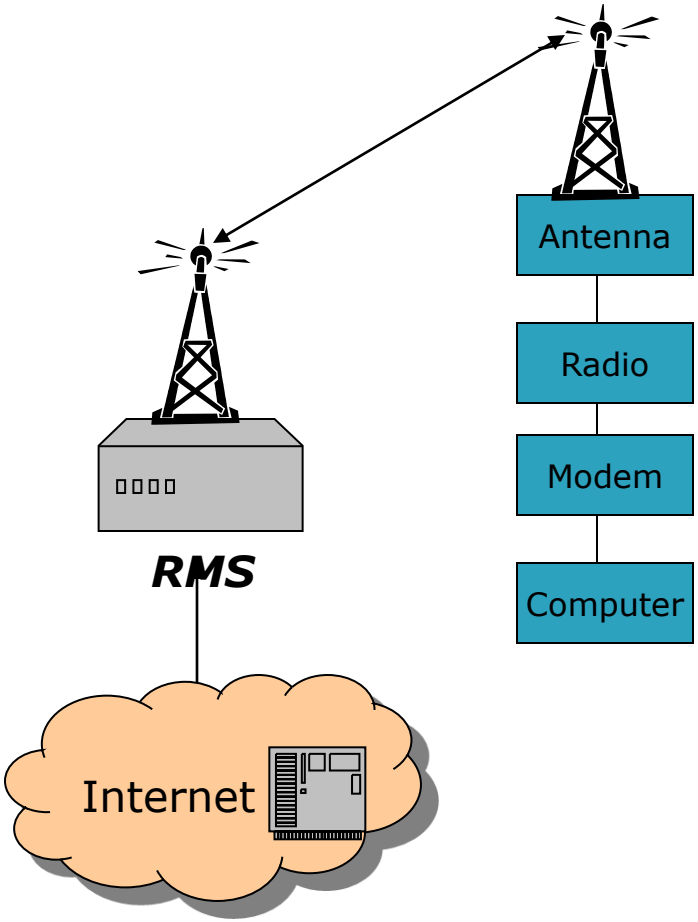


You can use HF radio over both short and long distances .

The RMS gateway station you connect with is an *HF RMS* gateway station.

If you have an HF transceiver and a modem or sound card you can use this method.

Winlink 2000: What is it?



There are other, more advanced connections possible using:

- Packet radio networks

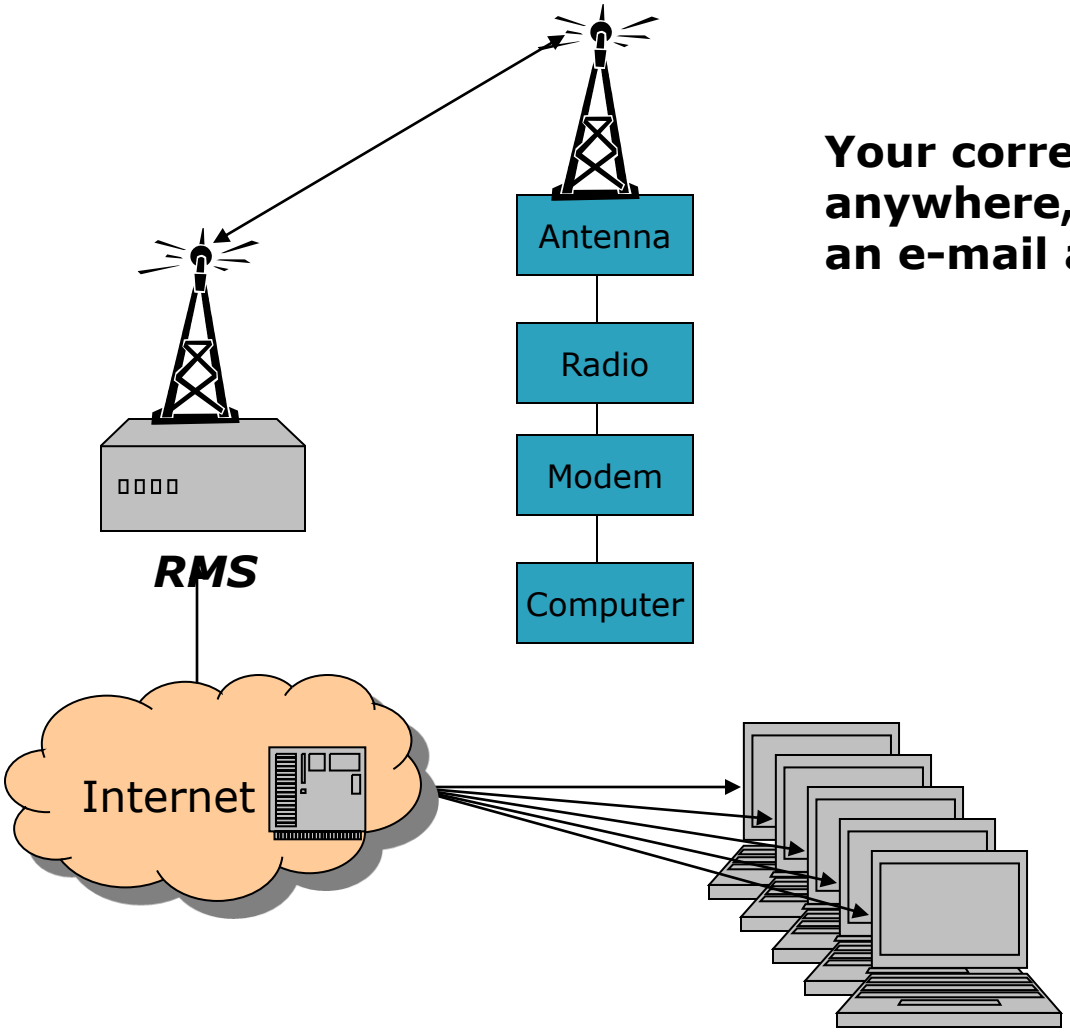
- D-Star

- WiFi or HSMM (High Speed MultiMedia)

- Multi-user LANs

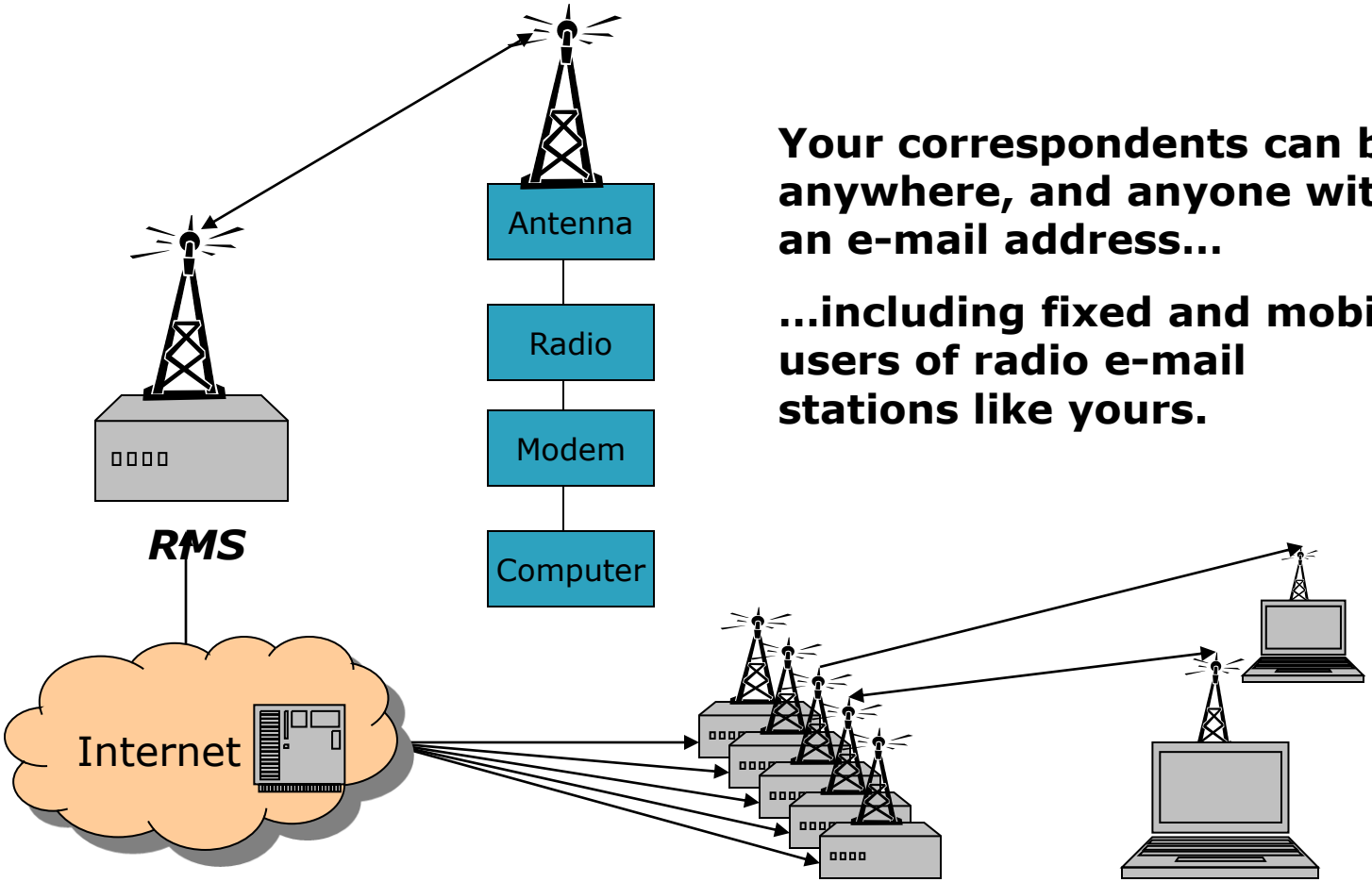
Knowledge of these is not necessary for most users.

Winlink 2000: What is it?



Your correspondents can be anywhere, and anyone with an e-mail address.

Winlink 2000: What is it?



Your correspondents can be anywhere, and anyone with an e-mail address…

…including fixed and mobile users of radio e-mail stations like yours.

Winlink 2000: What is it?

Okay.
What if the internet is out?

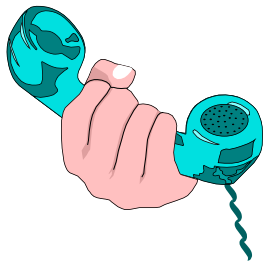
Winlink 2000: What is it?

Key assumptions/facts:

- Failures occur locally, regionally, even across continents.
- Failures have not occured globally.
- Internet technology was designed to make it survive nuclear war.
- If the Internet totally fails, there are Winlink options

Winlink 2000: What is it?

The *"last mile"* is an important concept in Emergency Communications.



It is the path across an area where conventional communications have been ***disrupted or overloaded*** by an incident.

Winlink 2000: What is it?

We cannot predict the size of "the last mile."

Local

Winlink 2000: What is it?

We cannot predict the size of "the last mile."

Regional

Winlink 2000: What is it?

We cannot predict the size of "the last mile."

International

Winlink 2000: What is it?

Winlink is a dependable, back-up E-mail *system* that bridges *"the last mile"* no matter its size.

Winlink 2000: What is it?

Winlink 2000: What is it?

Over 130 plus HF RMS Stations

Over 65 MARS RMS HF Stations

Winlink 2000: What is it?

Over 500 Amateur RMS Packet Gateway Stations

Winlink 2000: What is it?

To summarize:

Winlink 2000 is a robust Worldwide e-mail over radio network system

- Redundant, globally distributed, Common Message Servers (CMS)
- Support local communications with RMS Packet servers
- Support distant communications with RMS PACTOR/WINMOR Servers

Winlink 2000: What is it?

To summarize:

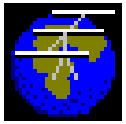
Winlink 2000 is a robust World-wide e-mail over radio system

Redundant, globally distributed, Central Message Servers (CMS)
- Support local communications with RMS Packet servers
- Support distant communications with RMS PACTOR Servers

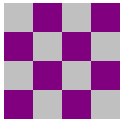
Please now let's shift gears and focus on Winlink 2000 user software

Winlink 2000: User Software

There are currently three principal programs users can use to access the Winlink 2000 system:

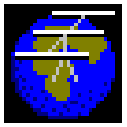

Airmail

Paclink


RMS Express

http://www.winlink.org/ClientSoftware

Winlink 2000: User Software



Airmail:

Original program for sending / receiving WL2K messages.

Supports HF PACTOR, VHF/UHF Packet and Telnet.

Supports peer-to-peer and connections to RMS Gateways.

Limited TNC types supported.

Simple built in e-mail interface.

Setup is less straightforward than newer clients.

Contains a catalog of over 700 WX Products and other related info.

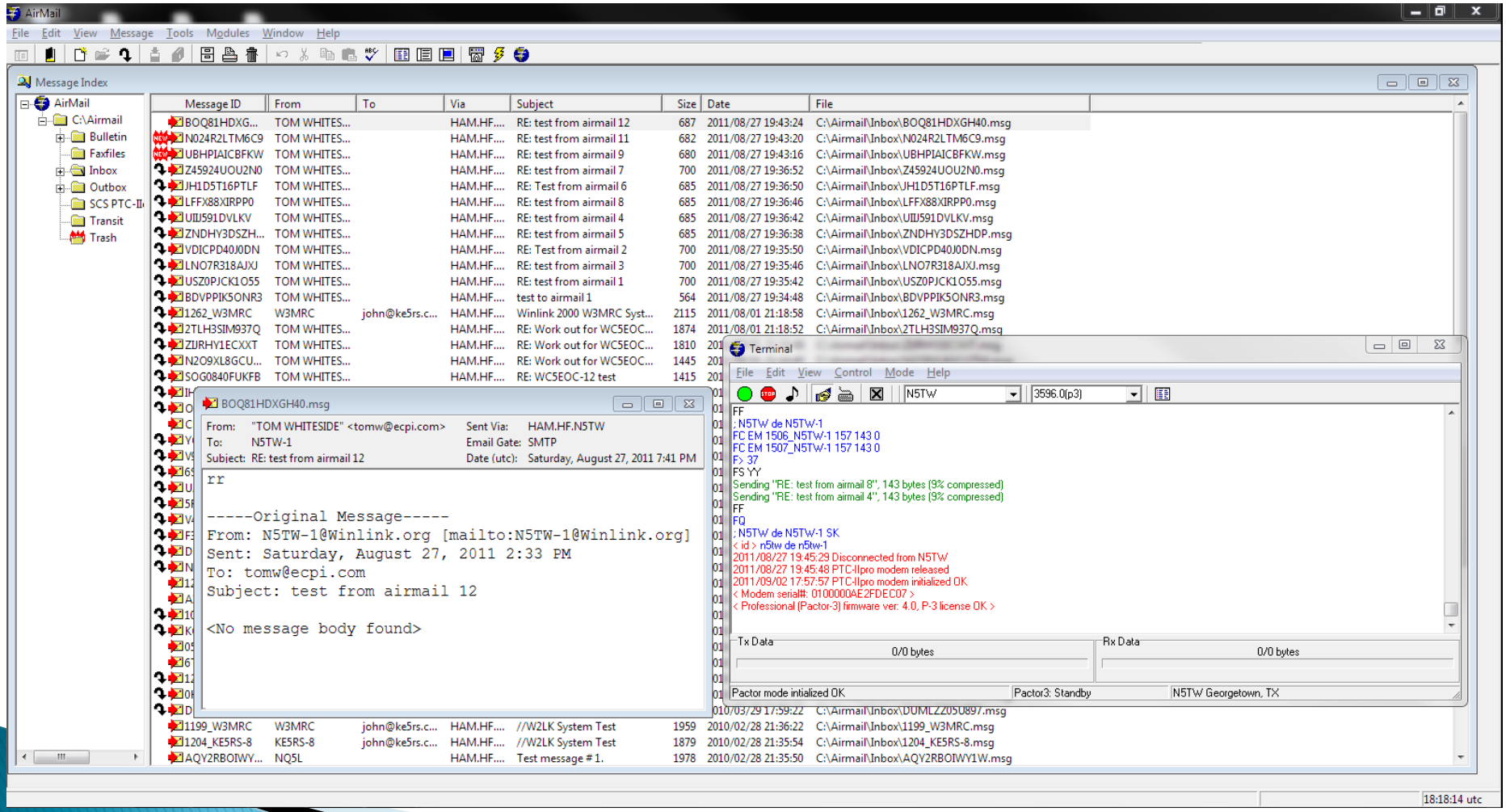
Contains an interface for real-time GPS reporting.

Still in widespread use, especially by the maritime community.

Available at: http://groups.yahoo.com/group/airmail2000/

Winlink 2000: User Software

Airmail:



Winlink 2000: User Software

Paclink:

Established program on 3rd generation – very stable

Supports HF PACTOR, VHF/UHF Packet and Telnet

Wide variety of TNC types supported including AGW packet engine

Pop/SMTP e-mail server supports popular client e-mail software

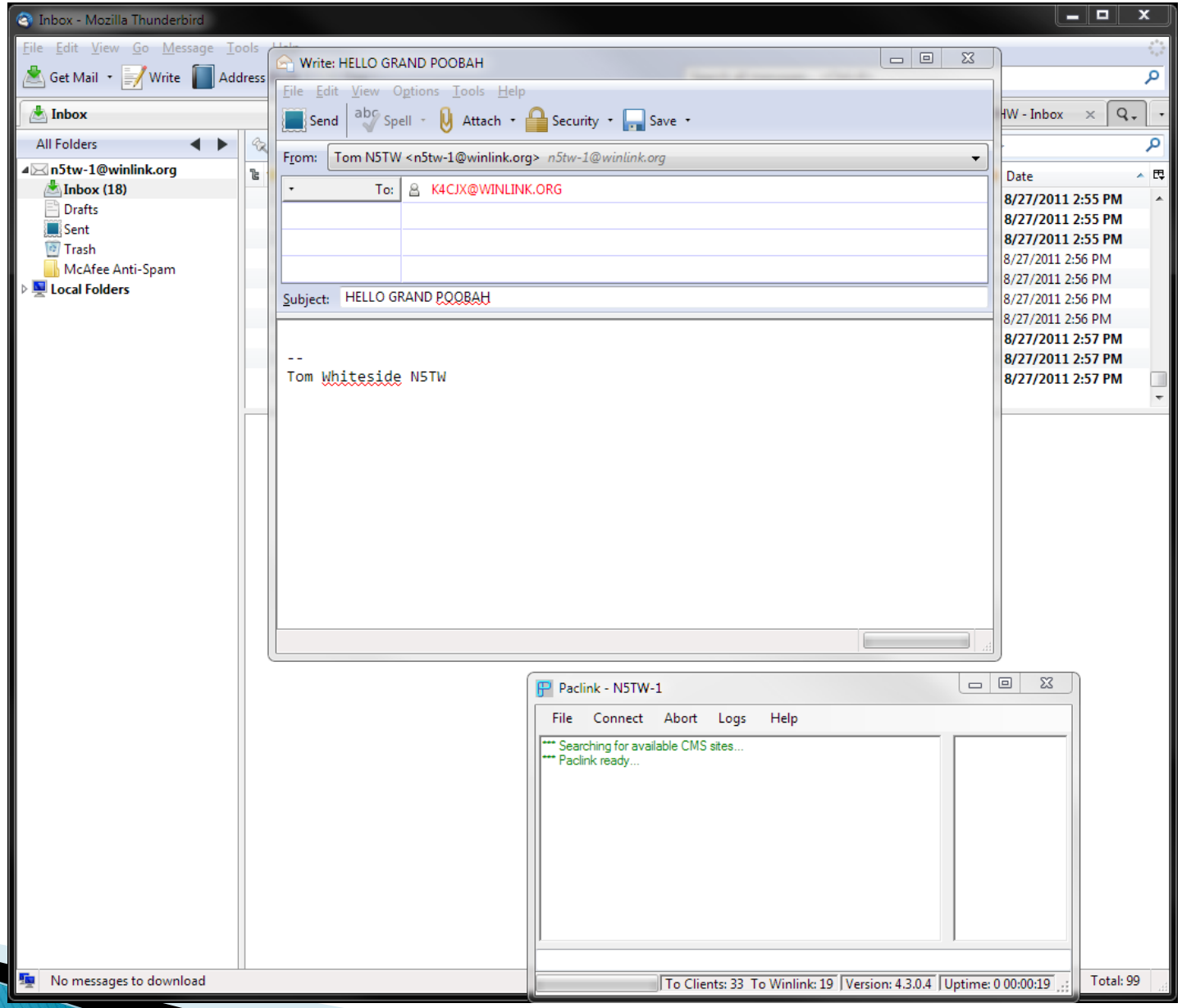
Provides multiple users access over a Wi-Fi or wired LAN.

Setup is simple

Available at: http://www.winlink.org/ClientSoftware

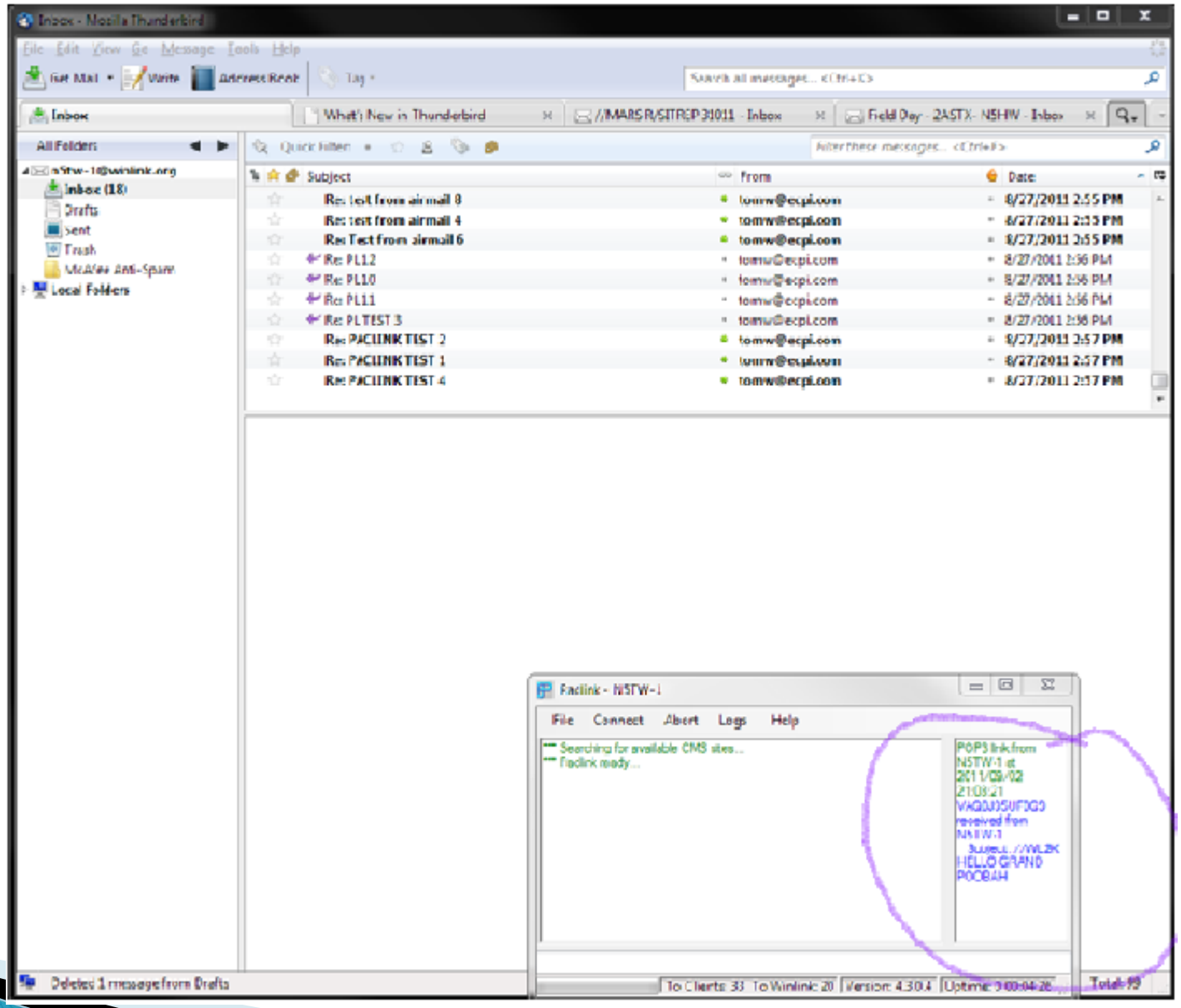
Winlink 2000: User Software

Paclink:



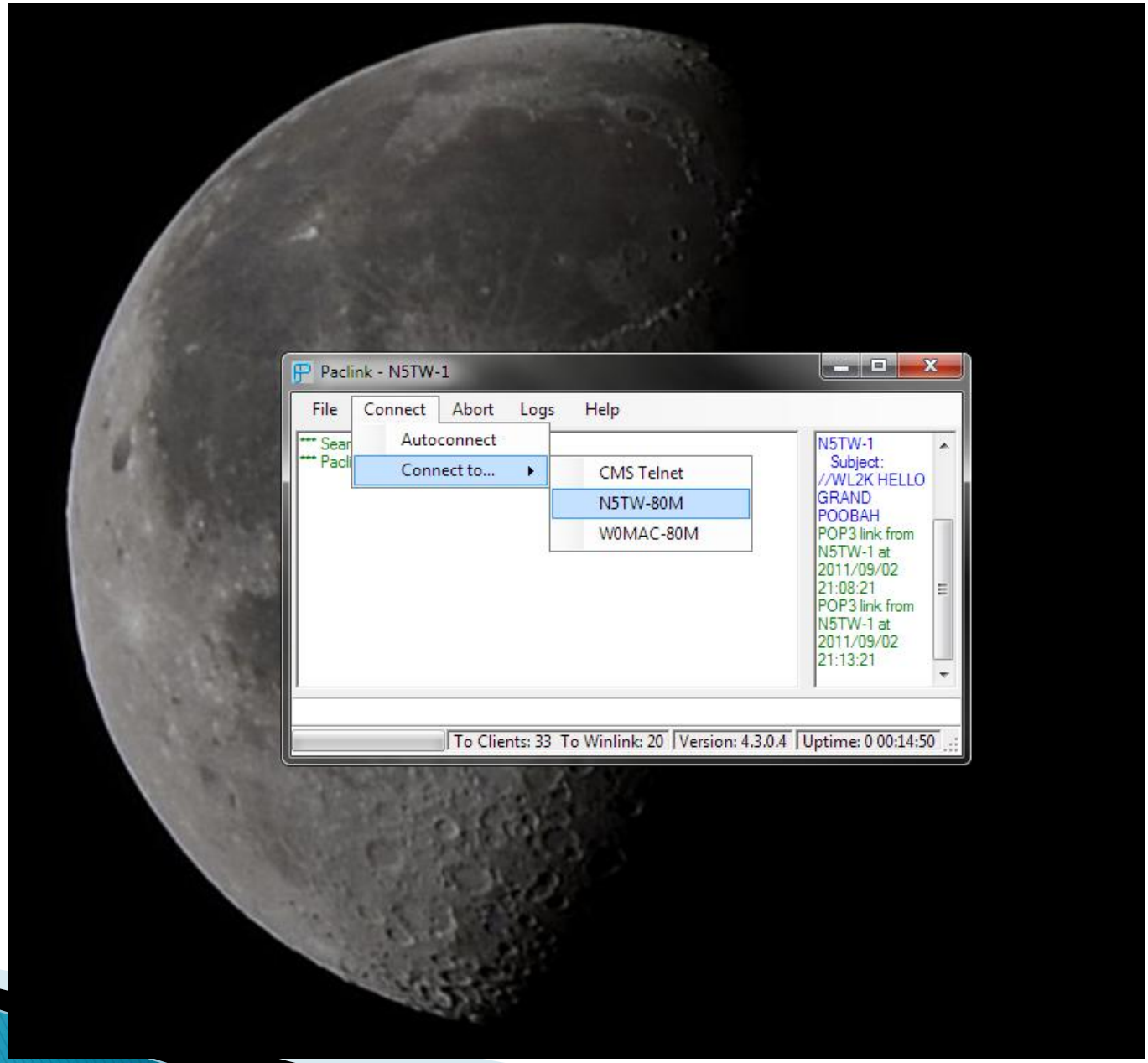
Winlink 2000: User Software

Paclink:



Winlink 2000: User Software

Paclink:



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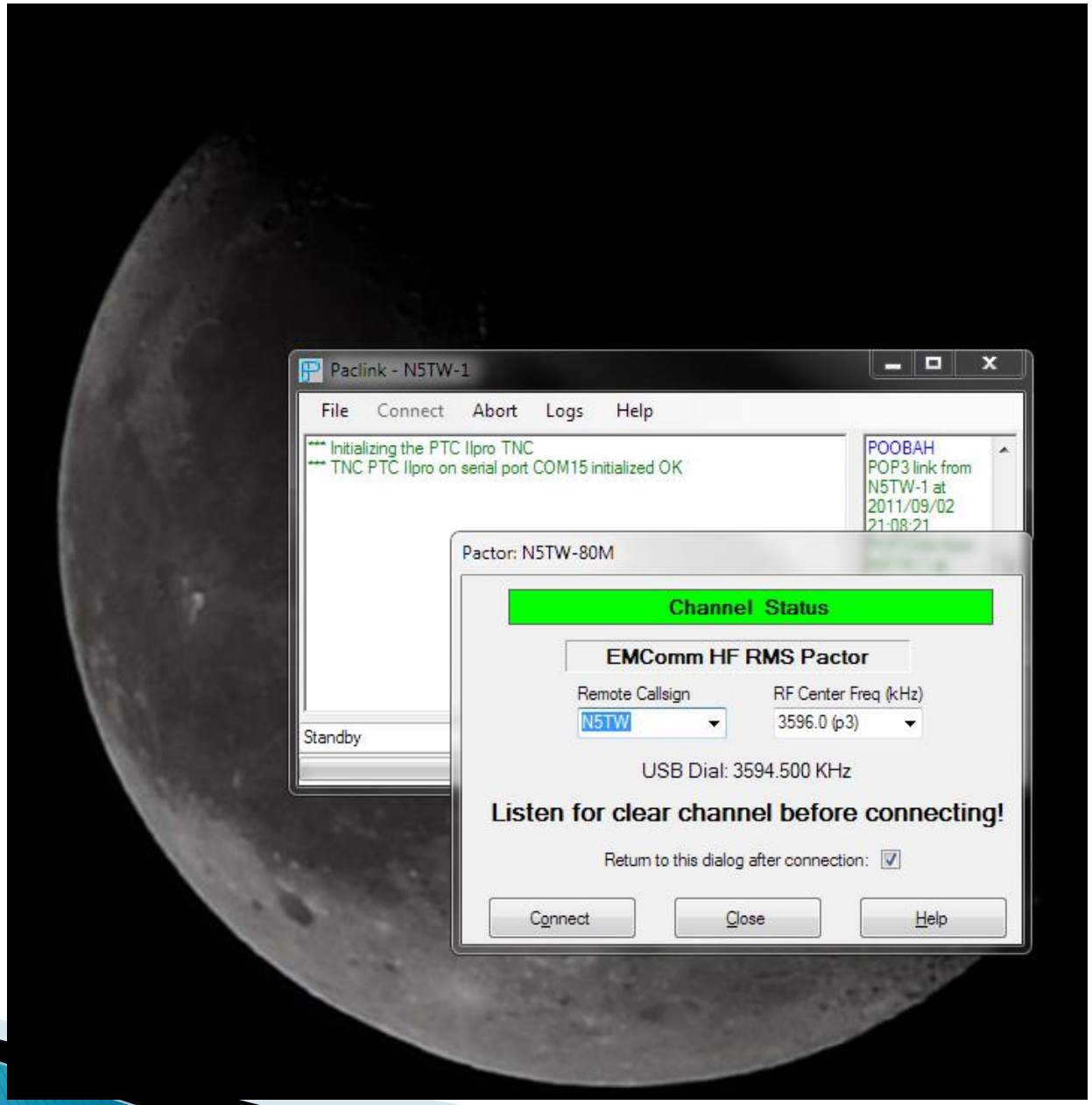
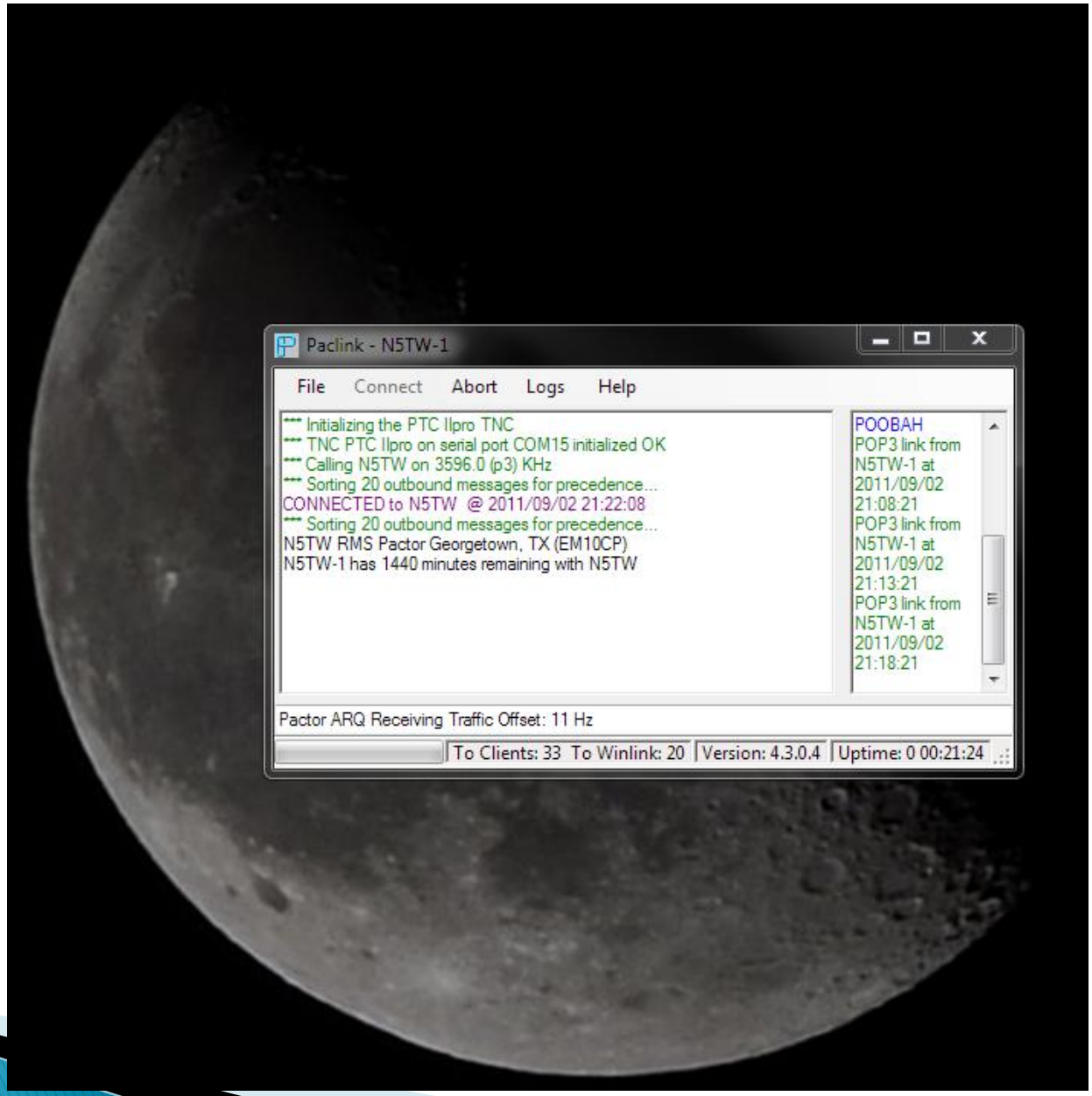


Winlink 2000: User Software

Paclink:



Winlink 2000: User Software

RMS Express:

Newest member of WL2K user software family

Supports HF PACTOR, HF WINMOR, VHF/UHF Packet and Telnet

Supports RMS Gateways and peer-to-peer connects.

Wide variety of TNC types supported, including a generic “KISS” mode.

Contains template for over over 700 WX and related products.

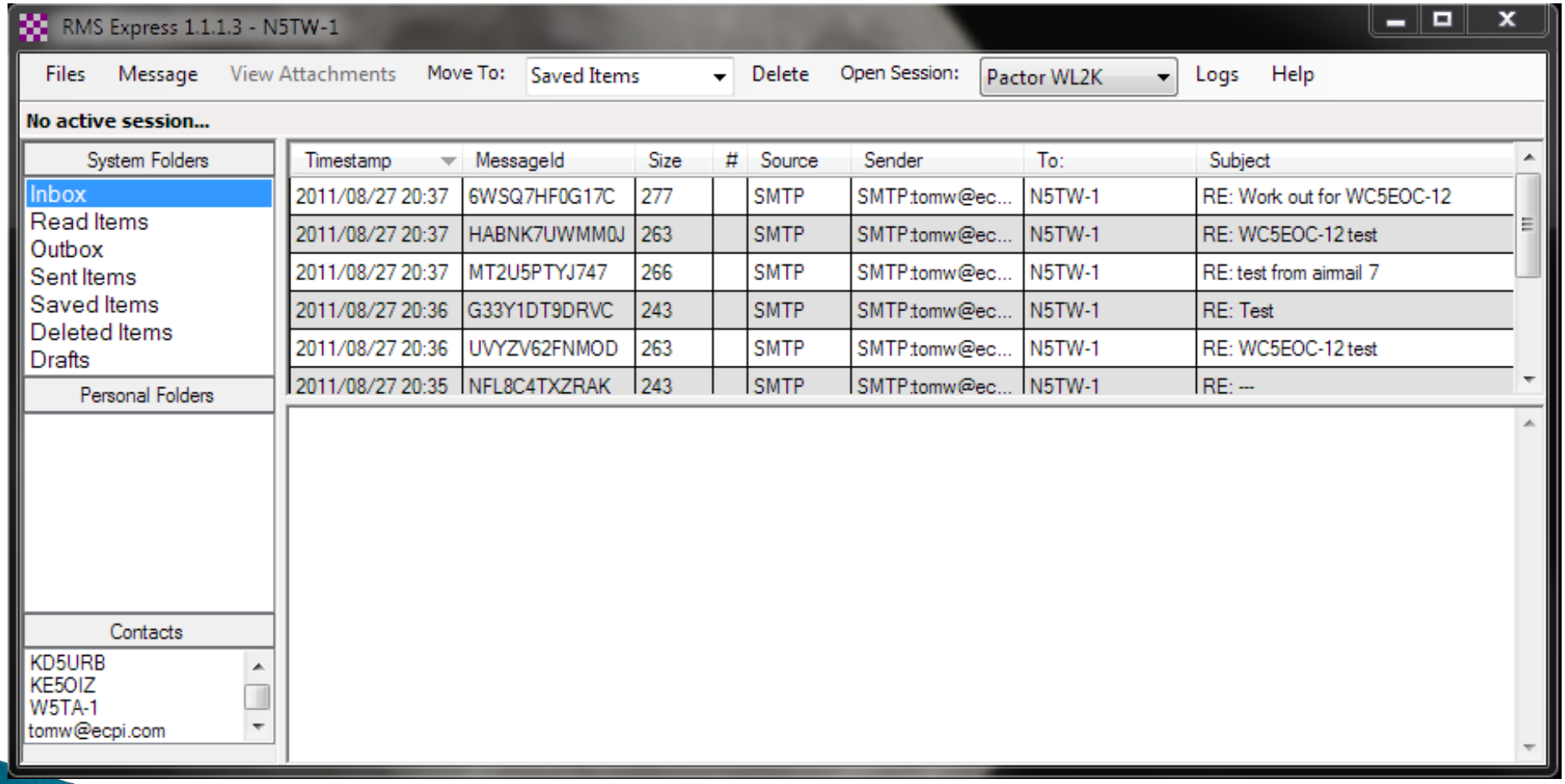
Contains interface for real-time GPS reporting.

Setup is simple with automatic program and frequency list updates.

Available at: http://www.winlink.org/ClientSoftware

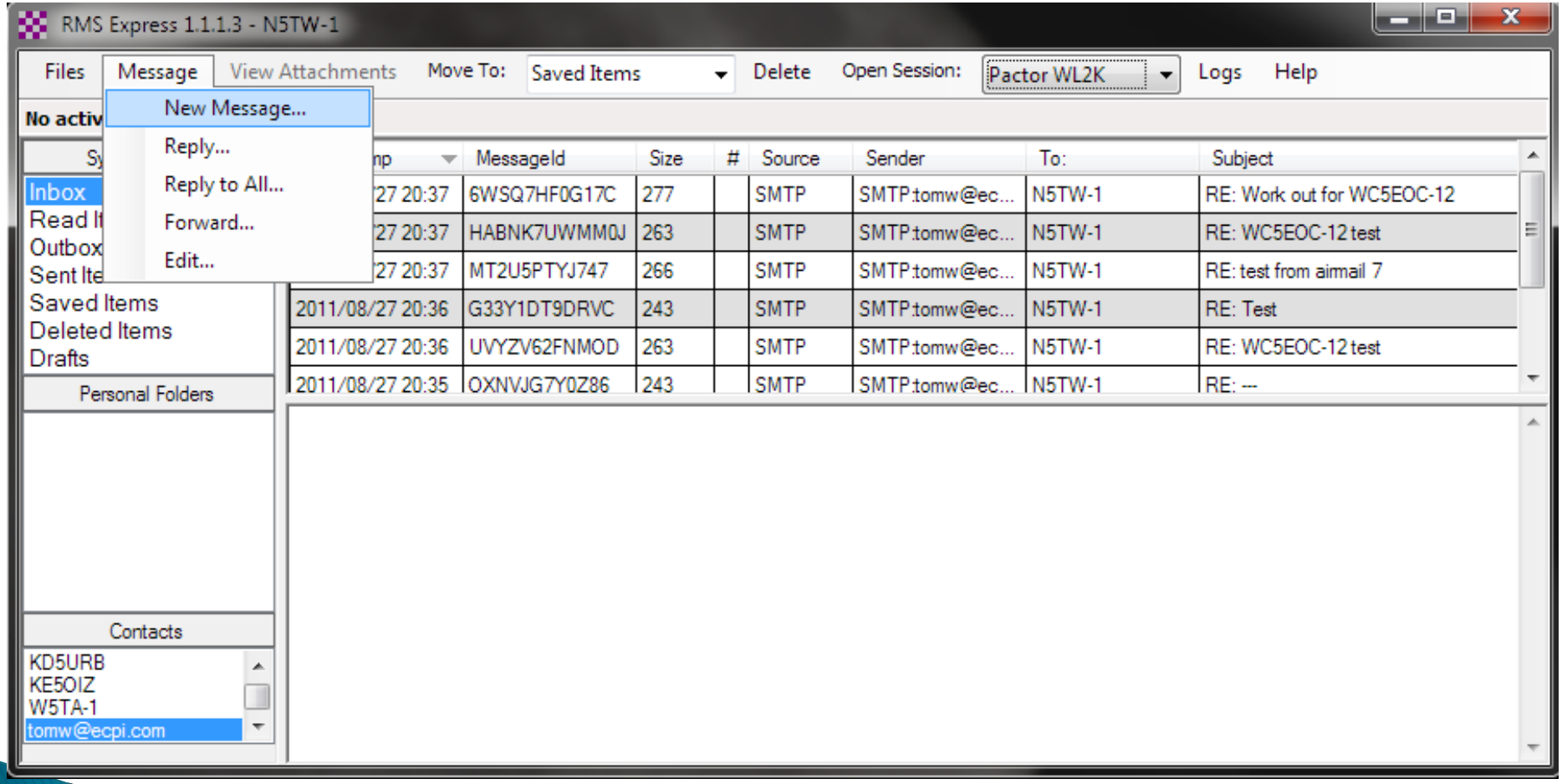
Winlink 2000: User Software

RMS Express:



Winlink 2000: User Software

RMS Express:



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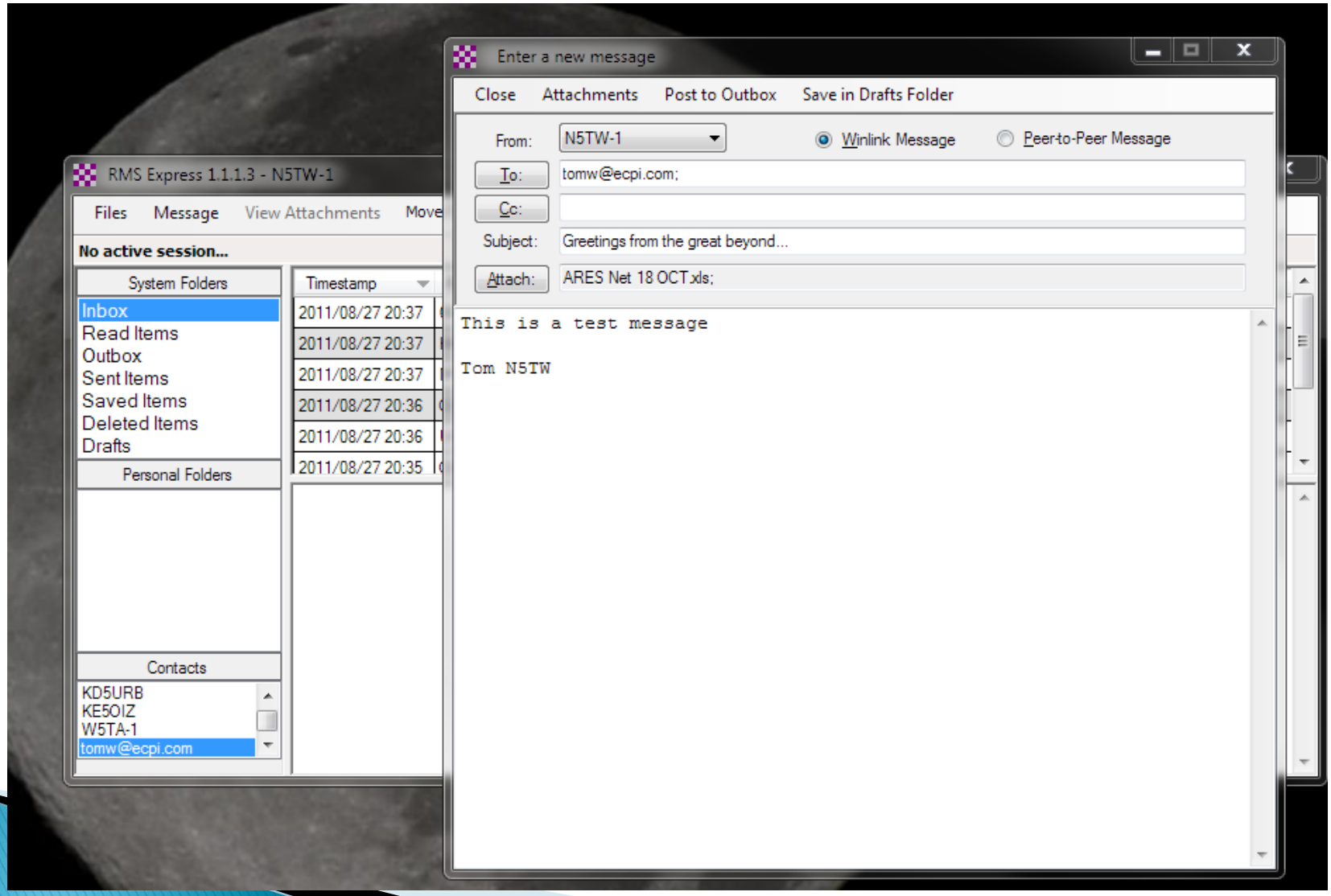
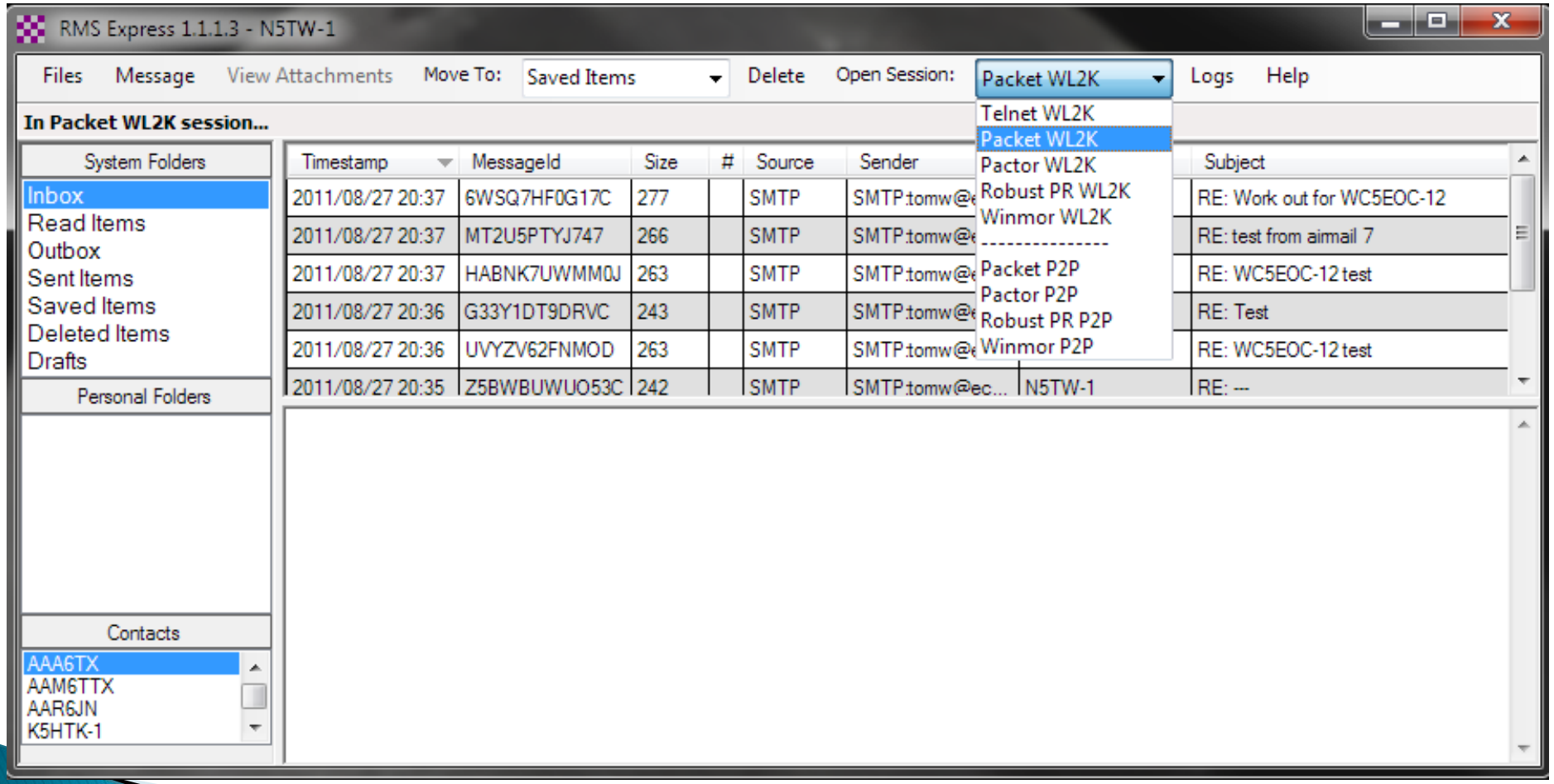


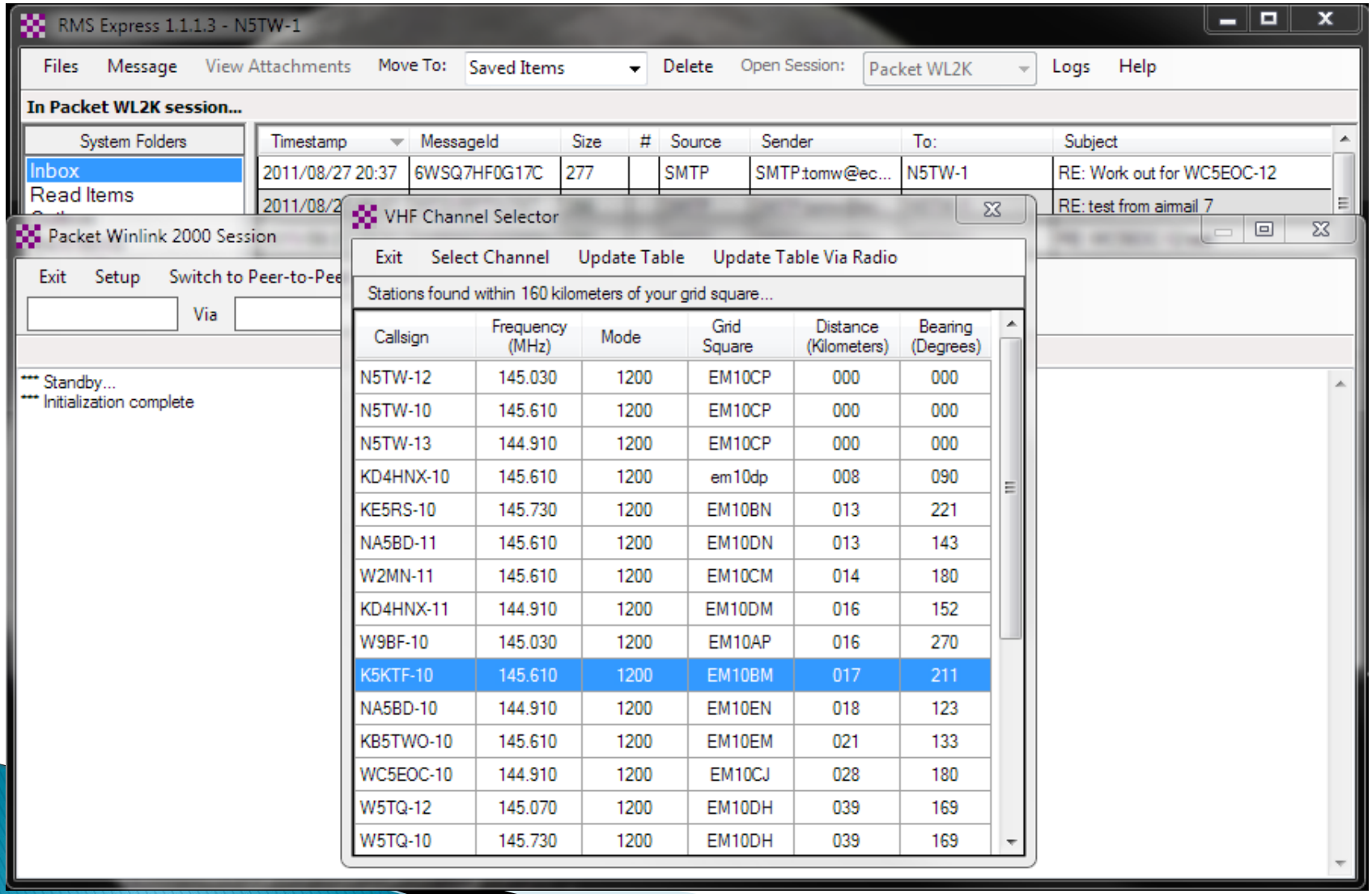
Winlink 2000: User Software

RMS Express:



Winlink 2000: User Software

RMS Express:



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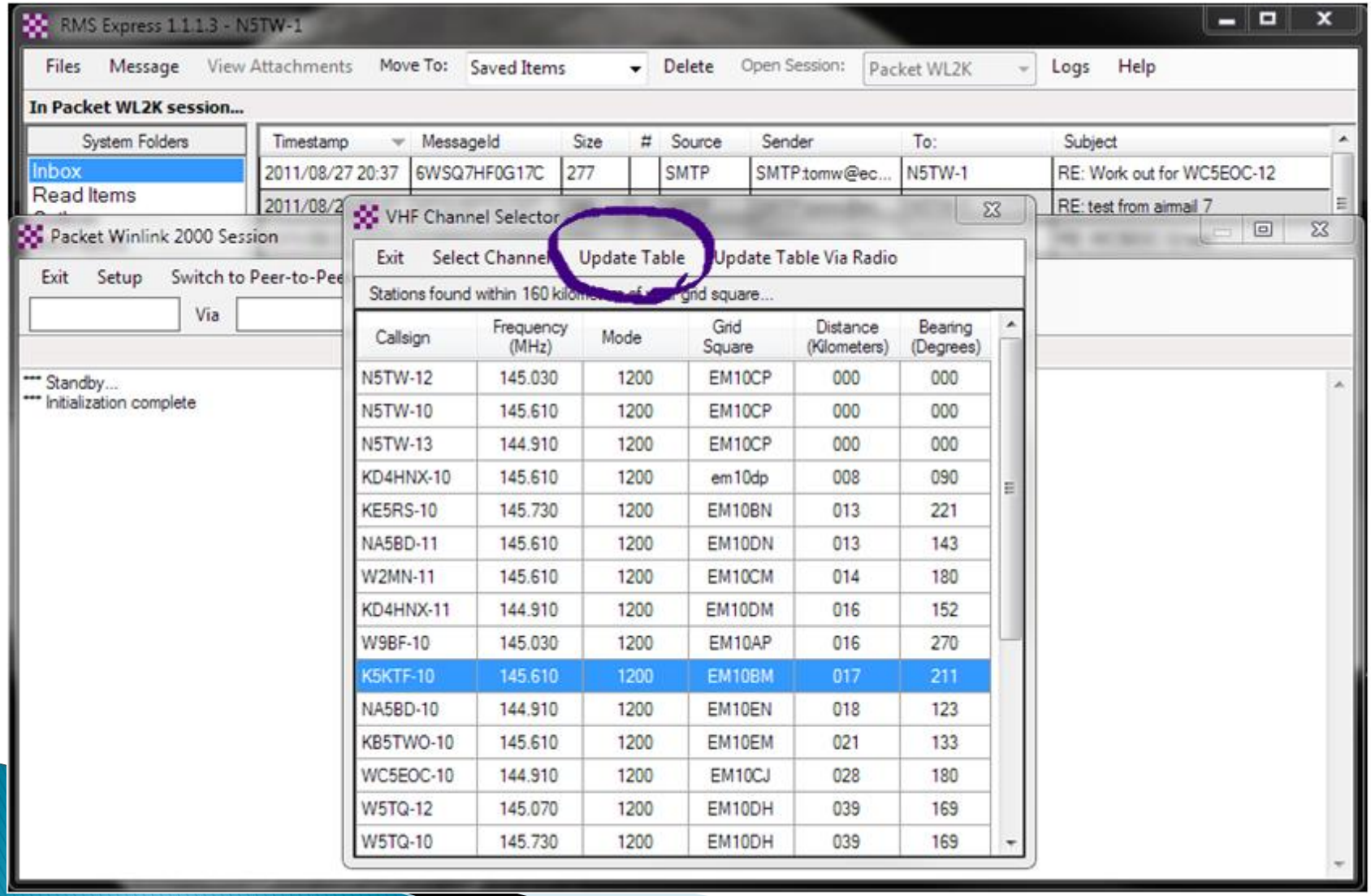

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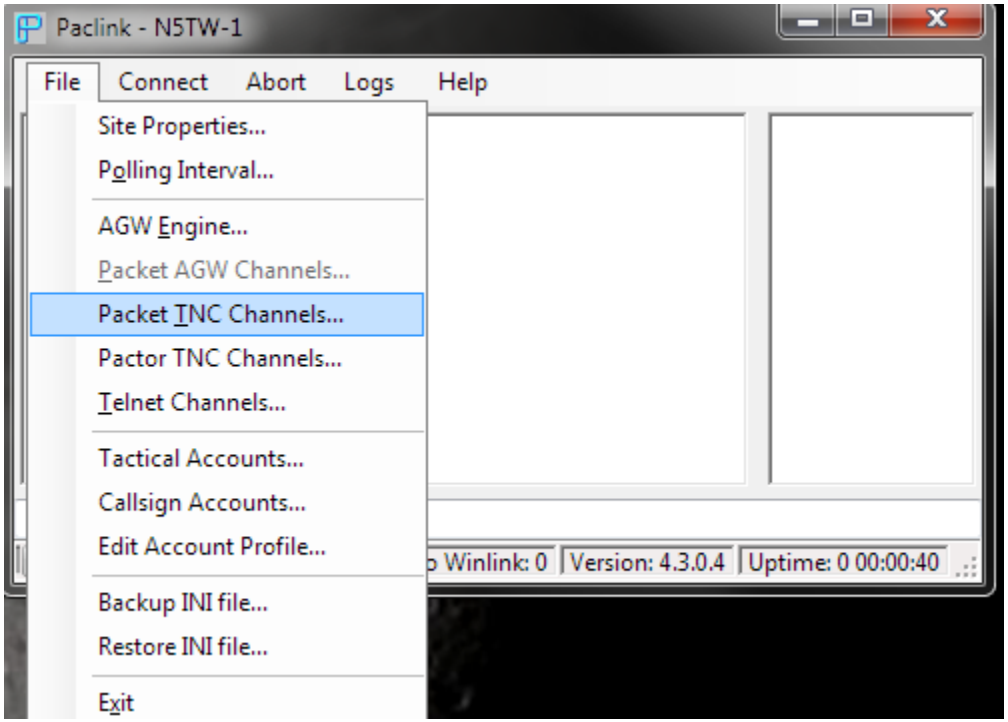

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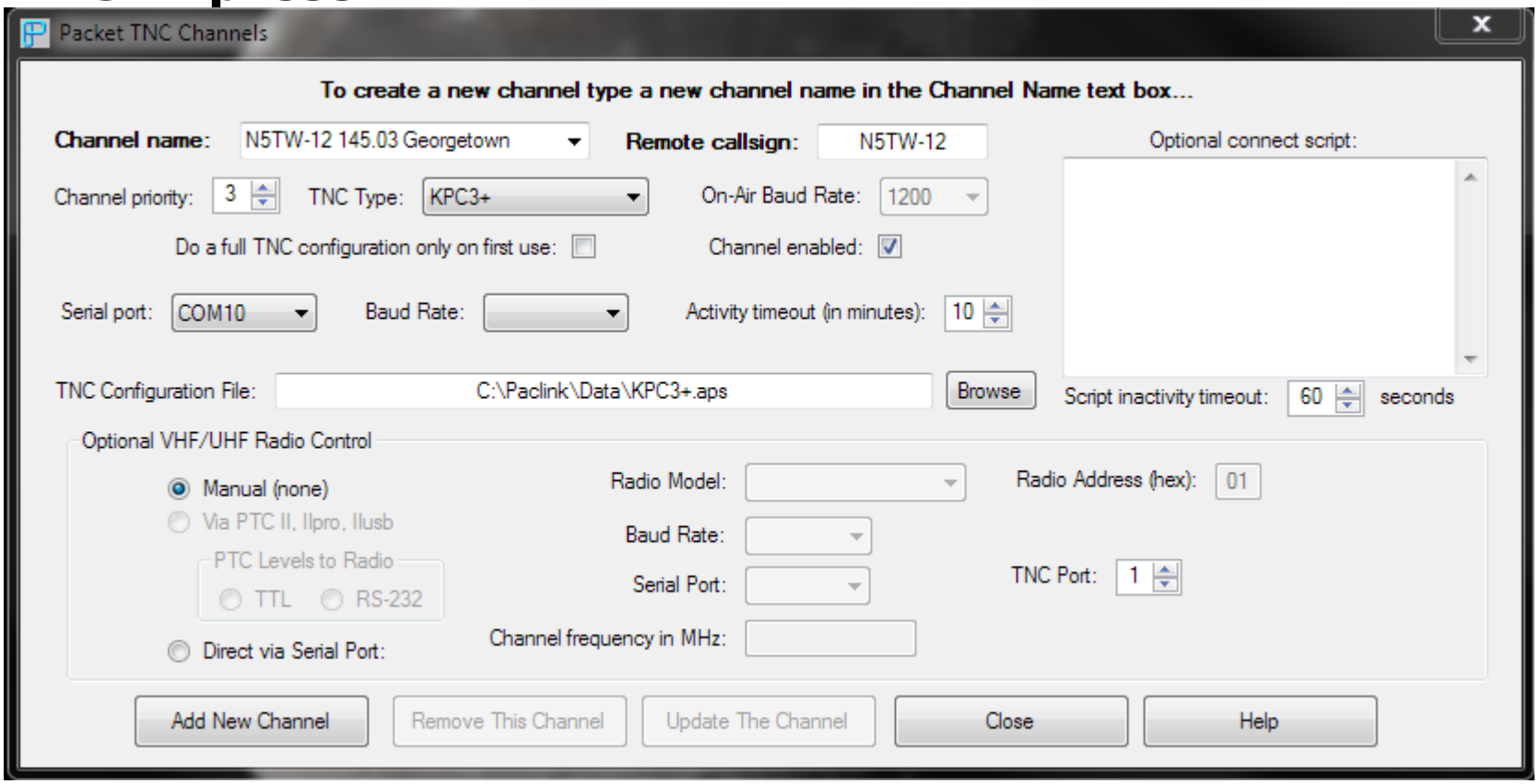
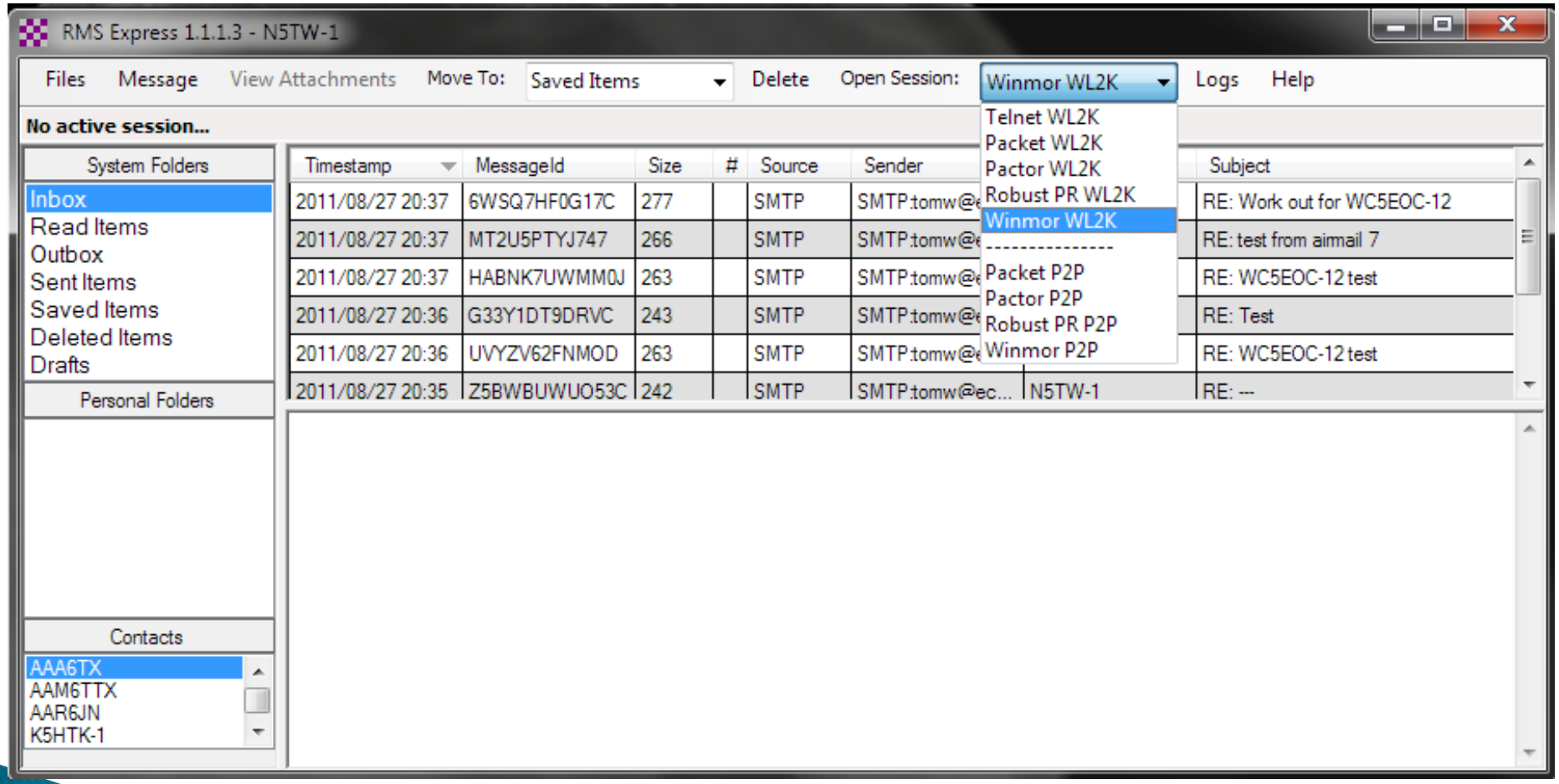


RMS Express channel setup is MUCH easier than Paclink
Easier to keep station list current too…

Winlink 2000: User Software

RMS Express:



Winlink 2000: User Software

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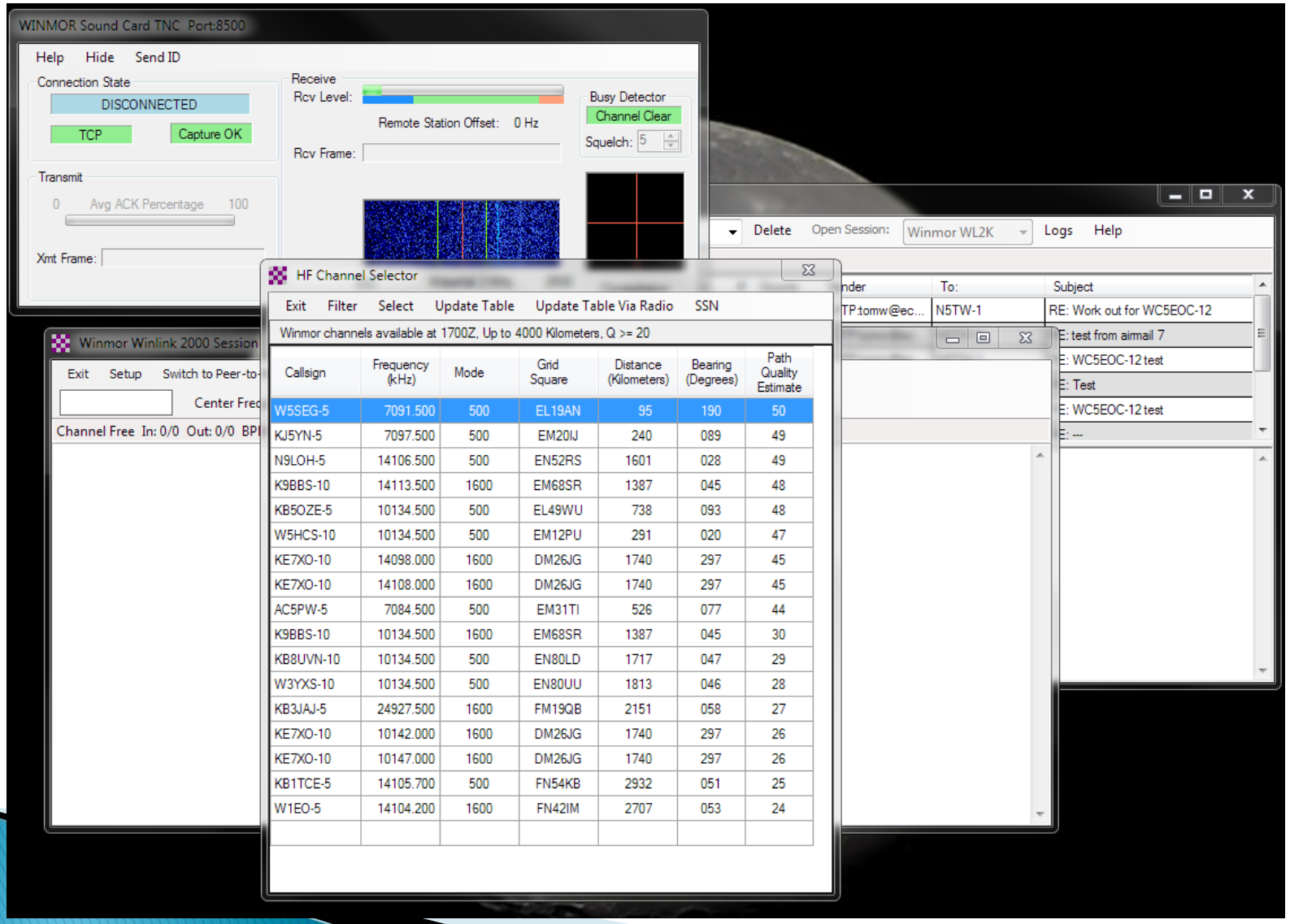

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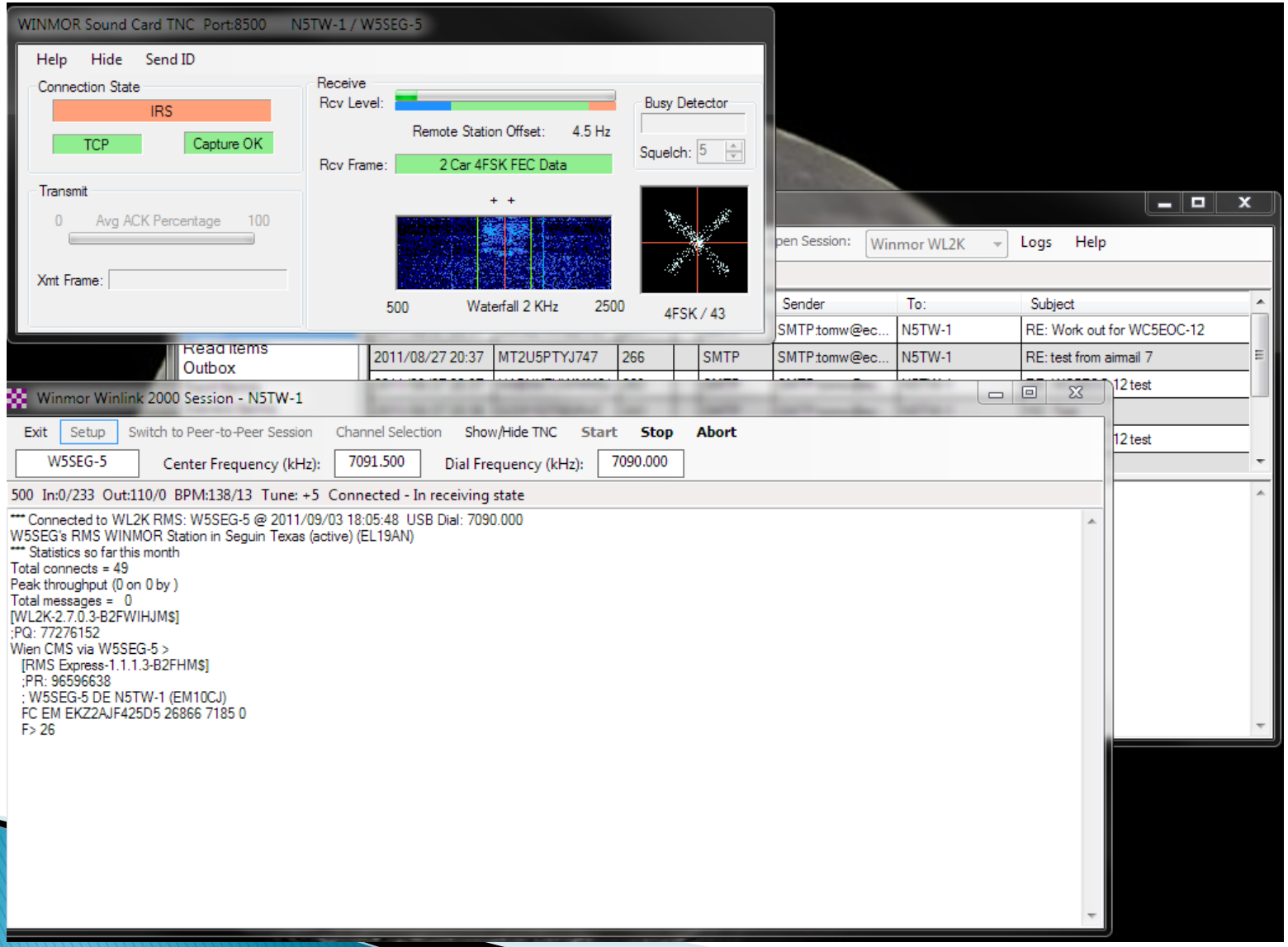

Winlink 2000: User Software

	RMS Express:	Paclink:
Modes supported:		
Telnet	**Yes**	**Yes**
Packet	**Yes**	**Yes**
PACTOR	**Yes**	**Yes**
WINMOR	**Yes**	**No**
Point to point :	**Yes**	**No**
Wide range of Packet TNCs:	**Yes**	**Yes**
AGW Packet Engine support:	**No**	**Yes**
E-mail interface:	**Internal**	**External**
Networked e-mail client support:	**No**	**Yes**
Ease of use:	**Best**	**Good**
Stability:	**Good**	**Best**

Winlink 2000: User Software

PACTOR versus WINMOR

Performance:	**PACTOR-I**	**200 bps max**	**450 Hz**
	WINMOR 450	**329 bps max**	**450 Hz**
	PACTOR-II	**850 bps max**	**450 Hz**
	WINMOR 1600	**1314 bps max**	**1600 Hz**
	PACTOR-III	**3600 bps max**	**2400 Hz**
	PACTOR-IV	**9000 bps max**	**2400 Hz**

WINMOR approaches PACTOR-II under GOOD conditions
degrades more quickly with poorer conditions

More RMS PACTOR servers than WINMOR ones (72 versus 46)

WINMOR reduced cost footprint & HW useful in other modes

For serious EMCOMM, go PACTOR II/III

Winlink 2000: Server Software

Software for Winlink RMS Sysops

Joining the WL2K Sysop Team and RMS Station Authorization

Before you inquire to become a WL2K sysop to run a Radio Mail Server (RMS) gateway station, we prefer you to be an active user of radio email in the system. If you are not a current user with a valid @winlink.org address, please see this page. The strength and reliability of the network is based directly upon the quality of service provided by knowledgeable sysops. We endeavor to maintain a high standard for sysops in order to provide a good user experience.

All WL2K RMS programs require your call sign to be in the WL2K user database with an administrator-assigned keycode and password. You will not be able to complete installation and operate sysop programs unless this is first set up by a WL2K administrator.

RMS gateways to Winlink 2000 are authorized to operators who agree to maintain their stations on the network 24x7x365, provide dedicated equipment, and agree to keep their software current. For any other special temporary use by a recognized emergency communications organization, please contact Steve Waterman, K4CJX, the Winlink 2000 administrator. Other than pre-approved portable or temporary stations, RMS stations that remain off-line or do not report to Common Mail Servers within 48 hours, or fail to operate with current software are purged from the network. Agency portable or temporary stations should be tested on a regular basis to maintain their readiness.

For network-wide alerts and sysop support, VHF/UHF sysops should join the "Winlink_Programs_Group" at yahoogroups.com. HF sysops should join the "WINLINK2K" group at yahoogroups.com.

- **To request RMS station authorization for VHF operations** or a KEYCODE for RMS Packet or Linux RMS Gateway software, contact Lor Kutchins, W3QA.
- **To request RMS station authorization for HF operations** or a KEYCODE for RMS Pactor, RMS WINMOR or Linux RMS Gateway software, contact Steve Waterman, K4CJX.
- Provide in your request:
    1. Your call sign.
    2. The call sign of the RMS station.
    3. The name and email address of the club license trustee if the RMS will use a club license.
    4. Whether the station will be an EmComm gateway (will appear only on EmComm frequency lists) or whether it will be listed as a public station.
    5. A reference to confirm your affiliation with an EmComm organization, if you intend to operate the station as a temporary or portable asset.
    6. Your commitment in writing to operate the station 24 hour/day, 7 days/week, 365 days/year and will use dedicated equipment to provide uninterrupted service.

Thanks,

The Winlink Development Team

Winlink 2000: Server Software

RMS Packet – VHF/UHF Packet WL2K Internet gateway

RMS PACTOR – HF PACTOR WL2K Internet gateway

RMS WINMOR – HF WINMOR WL2K Internet gateway

LINUX RMS Gateway – VHF/UHF Packet WL2K Internet gateway

RMS Relay – (Optional) Added capabilities for Internet outages

http://www.winlink.org/SysopSoftware

Winlink 2000: Server Software

- **RMS Packet – VHF/UHF Packet WL2K Internet gateway**
- **RMS Pactor – HF Pactor WL2K Internet gateway**
- **RMS WINMOR – HF WINMOR WL2K Internet gateway**
- **RMS Relay – (Optional) Added capabilities for Internet outages**
- **LINUX RMS Gateway – VHF/UHF Packet WL2K Internet gateway**

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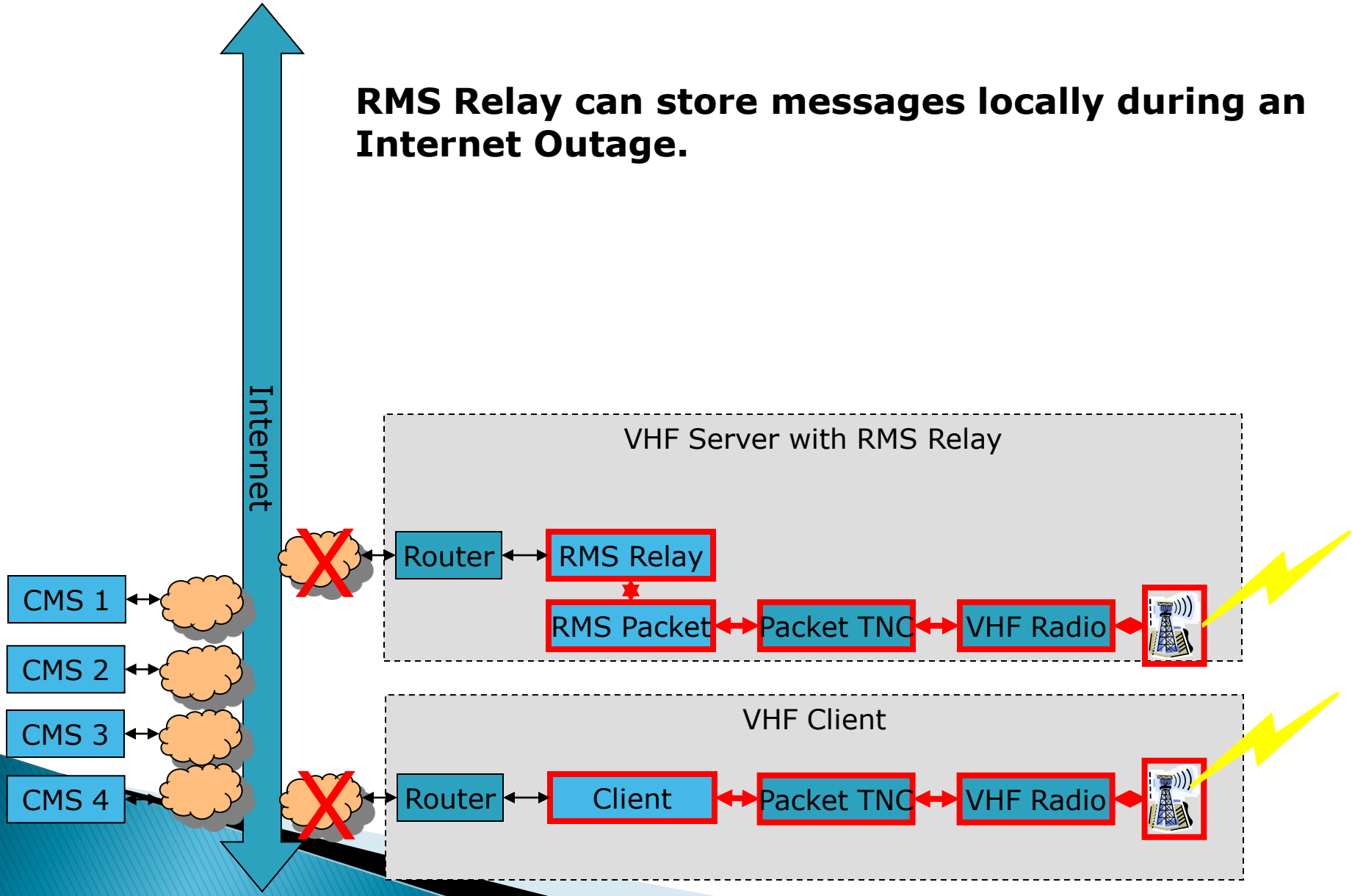
RMS Pactor and RMS WINMOR

RMS (Radio Mail Server) Pactor) and RMS WINMOR, with their suite of administration programs, is software intended for WL2K sysops who operate High-Frequency stations. This software supports HF Pactor and WINMOR radio gateways to the WL2K system. These RMS stations are part of the controlled and frequency-coordinated global network of WL2K participating stations.

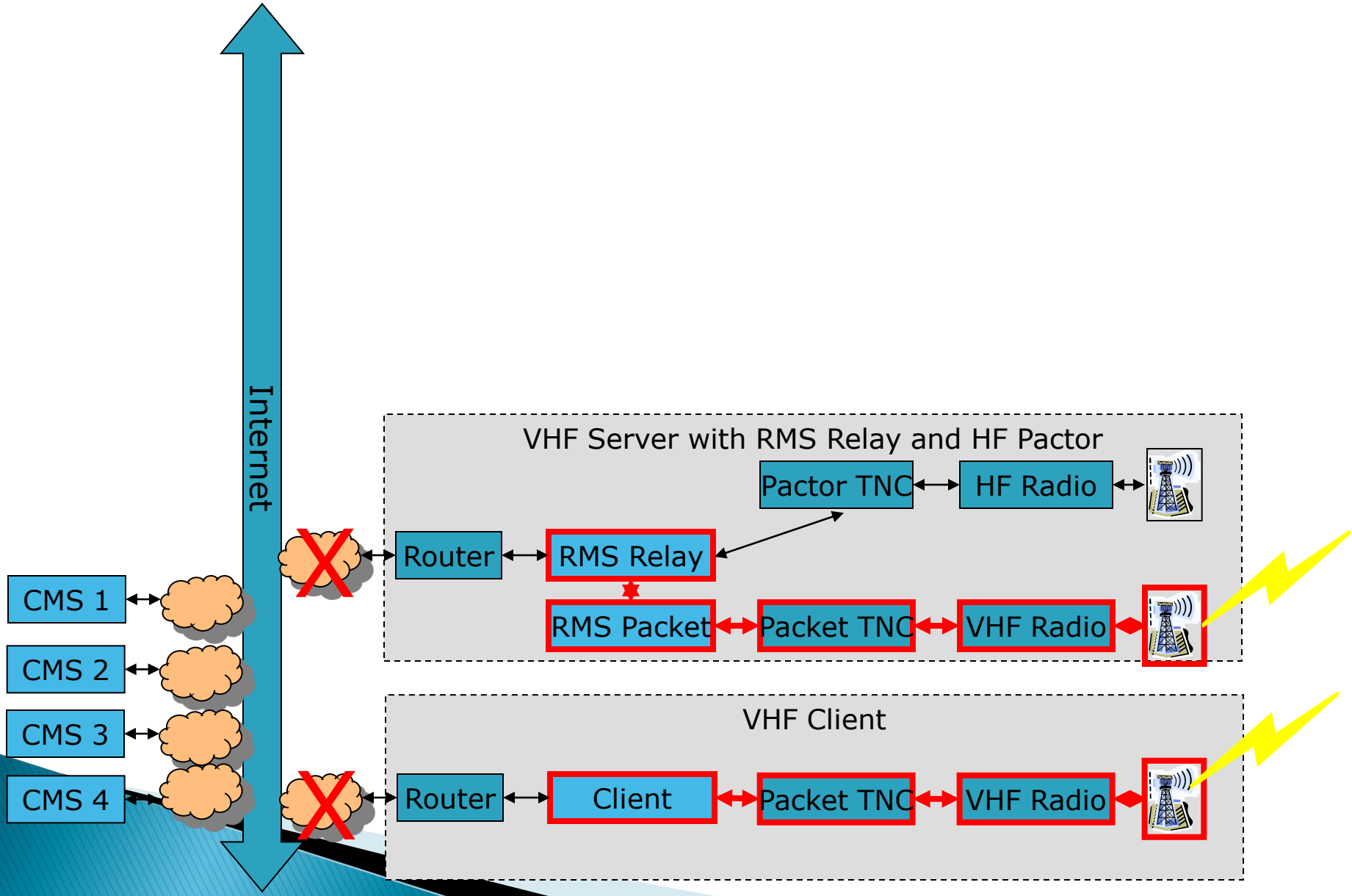
RMS Pactor and RMS WINMOR software authorizations are limited in certain world regions. If you have an interest in operating a public, EmComm or MARS WL2K HF station, please contact Steve Waterman, K4CJX.

Winlink 2000: RMS Relay

RMS Relay can store messages locally during an Internet Outage.



Winlink 2000: RMS Relay



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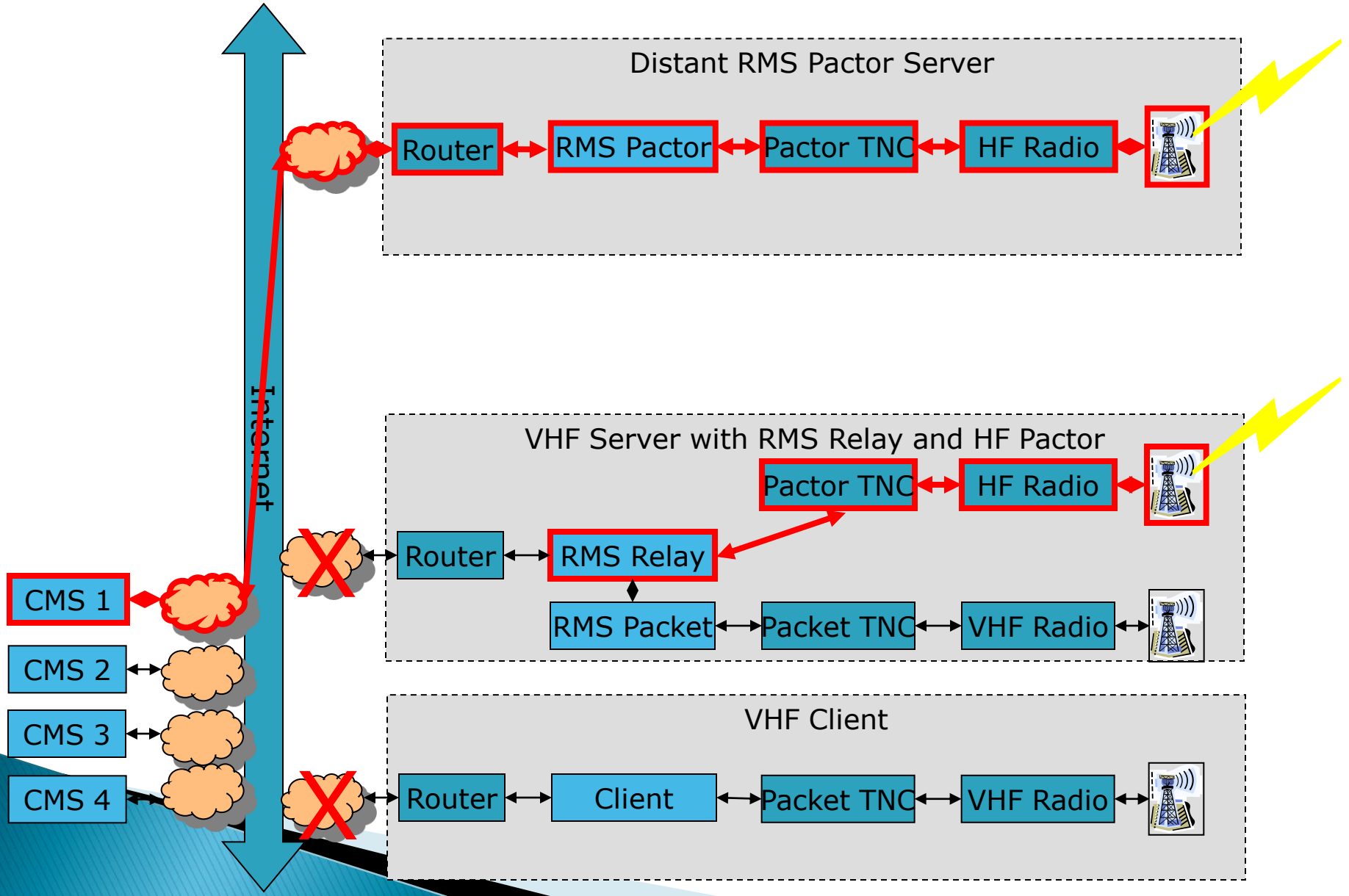

Winlink 2000: RMS Relay

RMS Relay Strategy considerations:

- Use other RMS Packet stations with Internet connectivity
  (Some groups enable RMS Relay manually.)

- Only have one station in an area running RMS Relay

- Consider adding HF Forwarding to escape local area
  Plan for having an operator to handle forwarding

- HF forwarding routes mail for all users in last 21 days
  This list can be edited to reduce traffic

- HF forwarding does not remove items from local database
  Local users can still pickup all traffic.

- Intended for temporary outages.

Winlink 2000: Implementation Strategies

Case 1: Isolated user

Case 2: Small community

Case 3. Larger community

Case 4. Forward deployed portable assets

Winlink 2000: Implementation Strategies

Case 1: Isolated user

For this case, HF is the answer..

Example: W9ON and KB3MBS doing communications from Haiti

Winlink 2000: Implementation Strategies

Case 1: Isolated user

Example: Annual International Health Service Medical mission to Honduras

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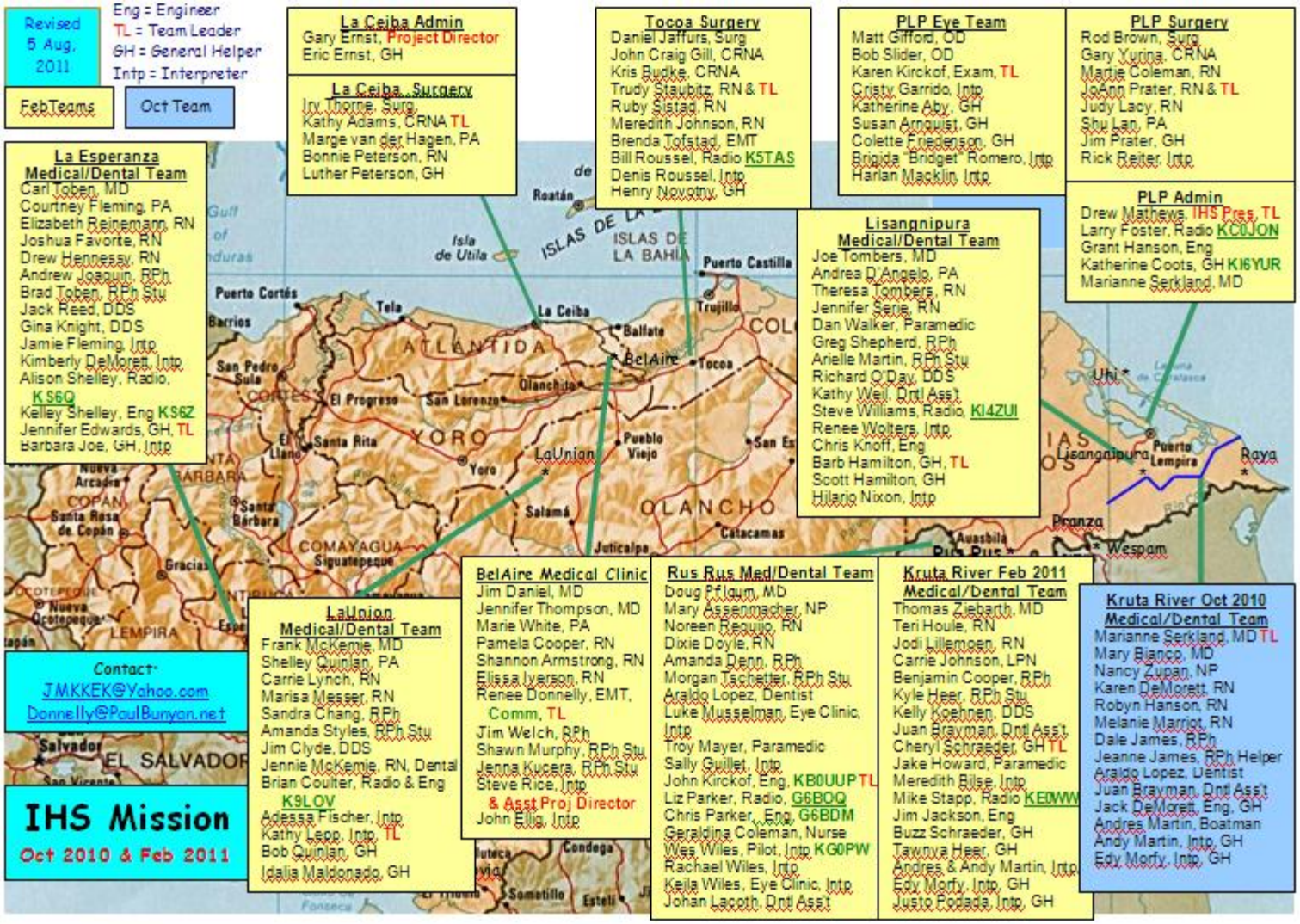
Example: Annual International Health Service Medical mission to Honduras



Winlink 2000: Implementation Strategies

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Example: Annual International Health Service Medical mission to Honduras

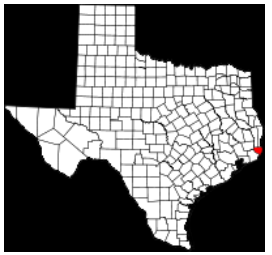
- *Want to volunteer?*

- John Kirckof KBOUUP
  - IHS Info & Recruitment Dir.
  - Ph 320-634-4386 JMKKEK@Yahoo.com

- Web site: www.IHSMN.org

Winlink 2000: Implementation Strategies

Case 2: Small Community



Example: Orange, Texas Population 85,000

Winlink 2000: Implementation Strategies

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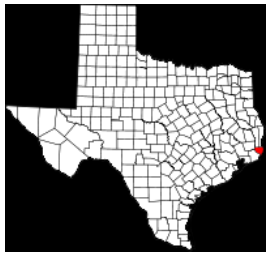


Example: Orange, Texas Population 85,000

- **Single local RMS Packet server**

- **Two additional RMS Packet servers in adjacent Jefferson County**

- **Distant backup in Sabine county via high intermediate digipeater**

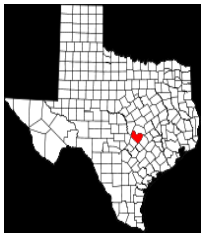
- **Permanent client installations plus communications trailer and portable gear.**

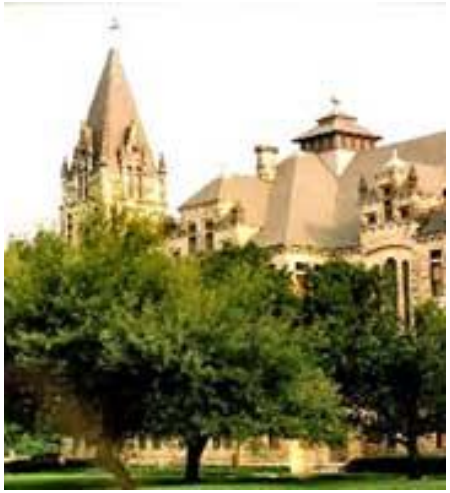
- **Adding RMS Relay with HF forwarding.**

Winlink 2000: Implementation Strategies

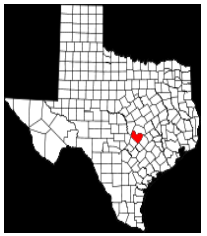
Case 3: Larger Community

Central Texas 1.5 million





Winlink 2000: Implementation Strategies



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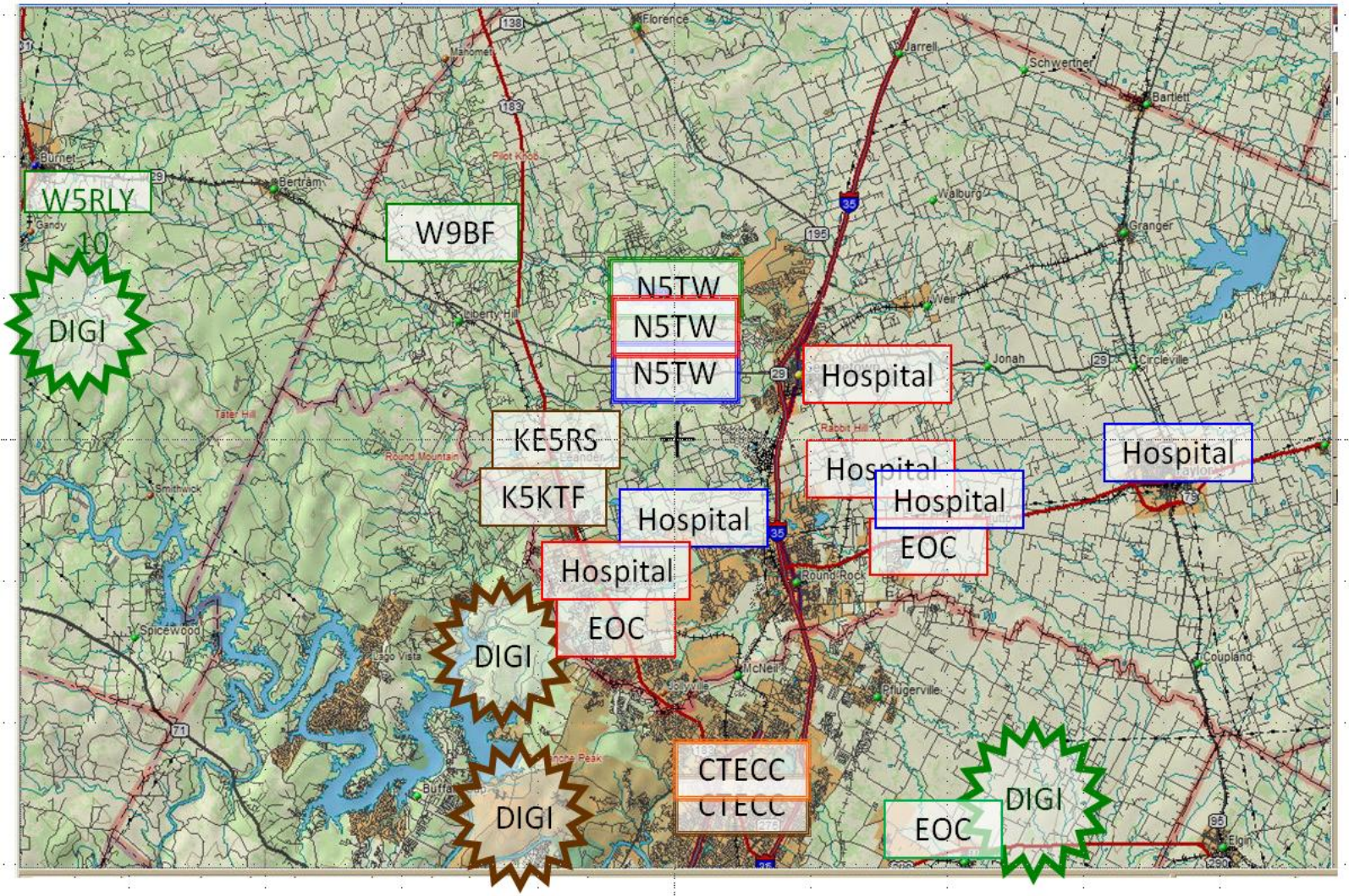
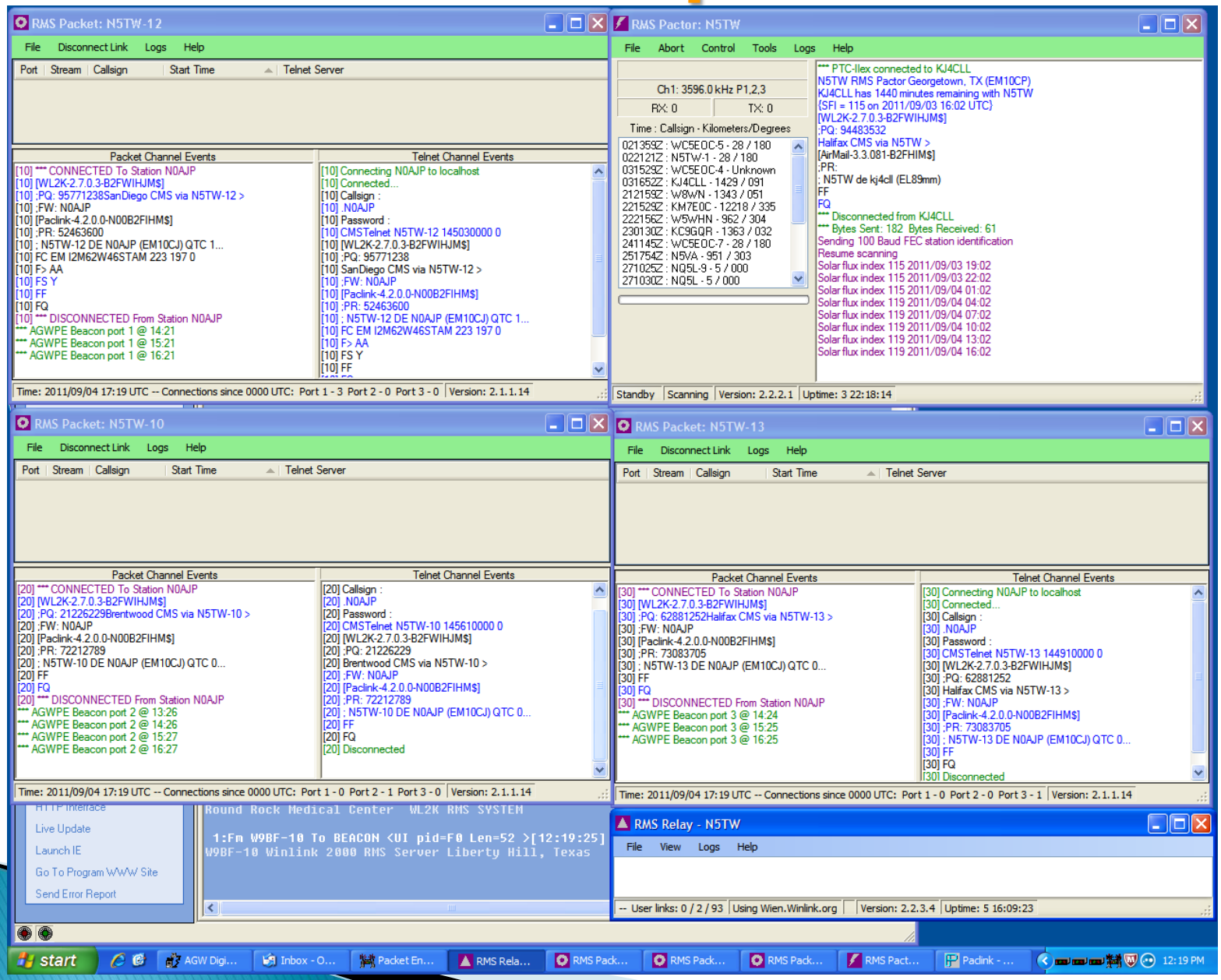


Winlink 2000: Implementation



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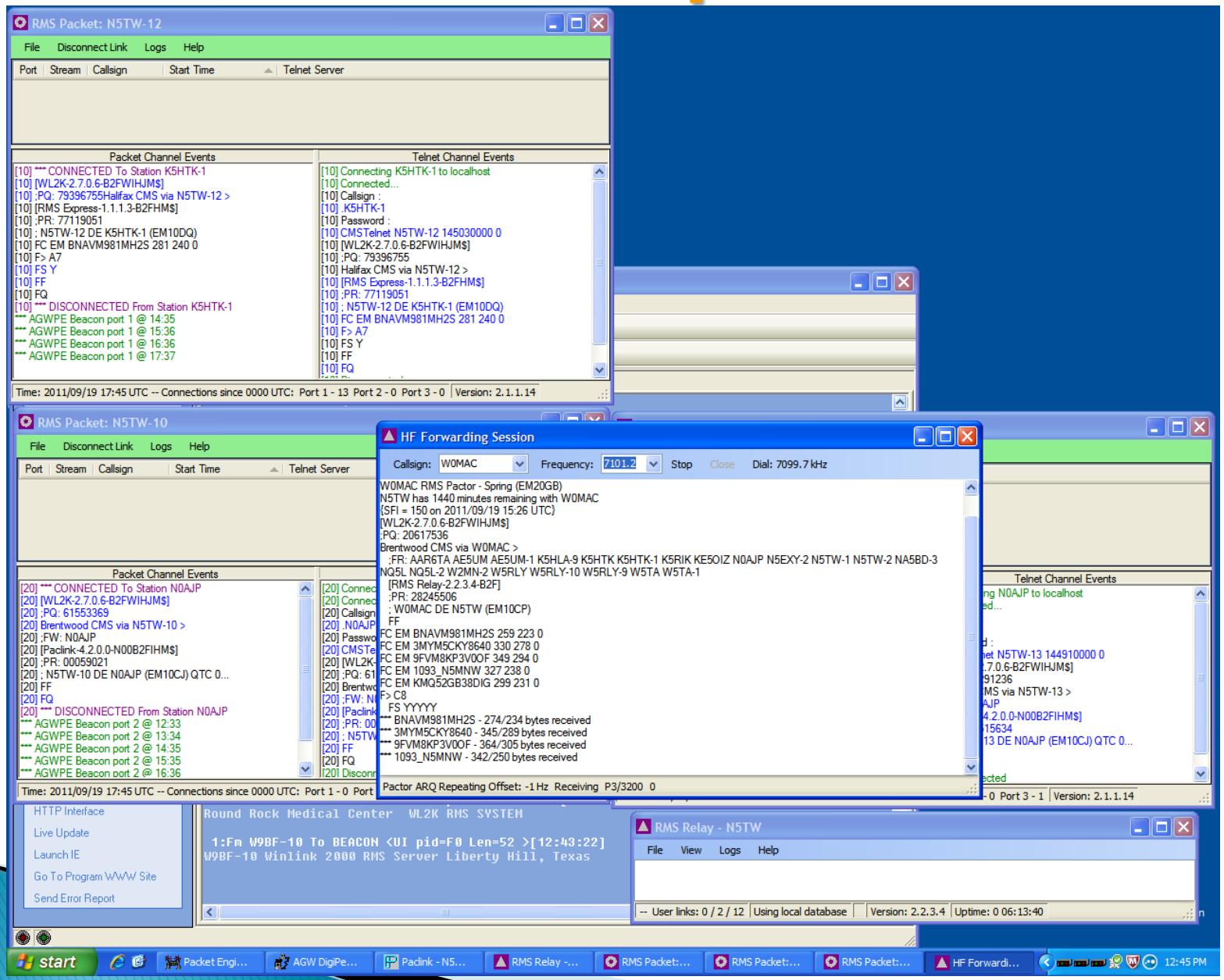
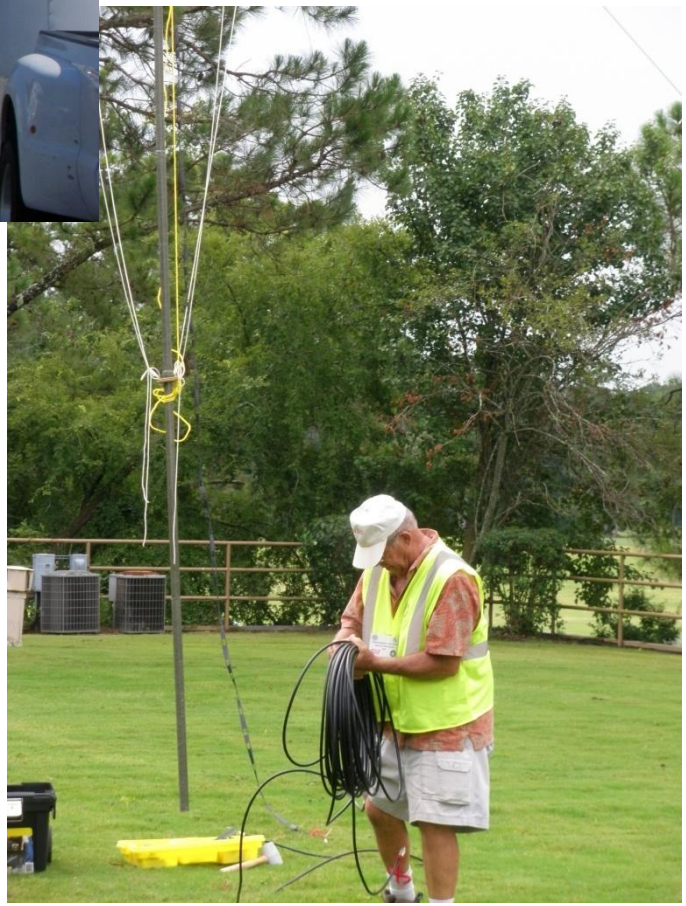


Winlink 2000: Implementation Strategies

Case 4: Forward deployed portable assets



Winlink 2000:

Summary

- Yahoo groups reflector WL2KEmComm:
  General questions, discussion on Winlink topics

- Yahoo groups reflector Winlink_Programs_Group.
  Helpful discussions about Winlink user programs.

- www.Winlink.org

Winlink 2000:

Questions?