Pierce County WA, District 5, ARES

Introduction to WINLINK

WINLINK Network, ARDOP, VARA, and RMS Express

(as of 18 February 2021)

PURPOSE

To provide the ARES Radio Operator with an introduction to the WINLINK system. Familiarize Radio Operators with the WINLINK Modes, Paths, Equipment requirements, and the RMS Express Interface in order to operate WINLINK/WINMOR.

RULES

- Maximum participation
- Silence Cell Phones please
- Ask questions as they arise
- Comments and experiences are welcome / for group discussion not side bar
- Breaks approximately every hour (+/-)

ADMINISTRATION

- Restrooms
- First Aid, Stop the Bleed, and AED kits
- Earthquake (Drop, Cover, Hold)
- Active Shooter (Run, Hide, Fight)
- Evacuation (routes, rally point, accountability)
- Additional duties (sign in roster, escorts)

AGENDA

- Objective
- Abbreviations
- BLUF: Bottom Line Up Front
- WINLINK Background
- What is WINLINK
- WINLINK and ARES
- ICS/NIMS support
- WINLINK Modes
- WINLINK Paths
- Equipment requirements
- Digital Interfaces
- RMS Express Interface
- RMS Express Advanced
- Conclusion
- Questions

OBJECTIVE

Mission:

As ARES Radio Operators one of our primary means of establishing effective communications is by re-establishing e-mail communications. E-mail communications have become essential to managing large scale responses to incidents. One of the major capabilities that we offer to our served agencies is the ability to send and receive e-mail traffic both within an effected area and outside of the effected area. ARES Radio Operators must be capable of providing effective communications to our Served Agencies.

Objectives:

- Familiarize Radio Operators with the capabilities of the WINLINK system.
- Familiarize Radio Operators with the Modes and Paths used by WINLINK.
- Familiarize Radio Operators with the equipment requirements to operate WINLINK.
- Familiarize Radio Operators with the RMS Express Interface.
- Provide step by step instructions on advanced RMS Express Interface options.

Abbreviations and Definitions

- **ARES** Amateur Radio Emergency Service
- **ARQ** Automatic Repeat Request
- **AUXCOMM** Auxiliary Communications
- **AX.25** Amateur X.25 is a data link layer protocol derived from the X.25 protocol suite
- **Baud** A common measure of the speed of communication over a data channel
- **BBS** Bulletin Board System
- **BLUF** Bottom Line Up Front
- **BPS** Bits Per Second (Symbol Rate)
- **CMS** Common Message Server
- **CSV** Comma Separated Values
- **E-mail** Electronic Mail
- **EMCOMM** Emergency Communications
- **FEC** Forward Error Correction
- **HF** High Frequency
- **ICS** Incident Command System
- **NIMS** National Incident Management System
- **LAN** Local Area Network
- **MPS** Message Pickup Station
- **P2P** Peer to Peer
- **RACES** Radio Amateur Civil Emergency Service
- **RMS** Radio Message Server
- **TNC** Terminal Node Controller **(also used to describe Digital mode encoders – ARDOP/VARA)**
- **UHF** Ultra High Frequency
- **VHF** Very High Frequency

Abbreviations and Definitions

WINLINK:

WINLINK, also known as the WINLINK 2000 Network, is a worldwide radio messaging system that uses amateur-band radio frequencies to provide radio interconnection services that include email with attachments, position reporting, weather bulletins, emergency relief communications, and message relay. The system is built and administered by volunteers and administered by the Amateur Radio Safety Foundation Inc., an American charitable entity and 501c(3)non-profit organization.

ARDOP:

ARDOP is a medium-performance protocol for HF transport of messages in the WINLINK system. Its chief attraction is low-cost implementations using common computer sound cards or low-cost radio-to-soundcard interface products.

UZ7HO:

The UZ7HO Soundmodem software TNC is a software dual-port Packet Radio TNC that uses a sound card as a modem and supports the AX.25 protocol. The UZ7HO Soundmodem has two TCP/IP interfaces to link with client applications.

VARA / VARA FM:

VARA and VARA FM are digital modes that are audio-signal-based (as opposed to packet), and rely on multi-carrier Orthogonal Frequency-Division Multiplexing (OFDM). VARA / VARA FM decompose the transmission into multiple sub-carriers, allowing multiple simultaneous low-symbol-rate transmissions on multiple sub-carriers to achieve high-speed data transfer across similar spectrum usage. The use of subcarriers allows numerous signals to be transmitted concurrently – vastly improving on packet speeds. However, VARA FM is not compatible with packet; they are separate systems.

Bottom Line Up Front (BLUF)

BLUF:

Since the advent of electronic-mail (e-mail) people and organizations have become increasingly reliant on the simplicity and effectiveness of e-mail communications. E-mail affords the organization an avenue for delivering written messages, lists, graphics, and pre-defined formatted documents to multiple recipients in near real time. In todays modern work space, hand written message forms are seldom used and are not transparent to normal operations.

The WINLINK network provides the Radio Operator with a non-internet dependent, radio based last mile avenue to restore effective communications into and out of the effected area.

ARES Radio Operators must be capable of providing effective communications to our Served Agencies, and the WINLINK network is a critical tool to provide effective digital communications.

WINLINK Background

WINLINK development history:

- Initiated in the early 1980's, known as APLINK (Amtor-Packet Link).
- Gained notoriety during the 1990 Gulf War resulting in a CBS documentary.
- With the mainstream introduction of the internet, work progressed and resulted in WINLINK Classic and NETLINK.
- Development in the late 1990's resulted in the WINLINK 2000 Network.
- An all volunteer project of the Amateur Radio Safety Foundation a 501.C(3) non profit.
- Donations are highly encouraged by purchasing a license. Funds are used to maintain the system and provide for further development.

What is WINLINK?

What is WINLINK?

"A Worldwide system for sending e-mail via radio."

Provides e-mail from almost anywhere in the world.

Entirely supported and operated by amateur radio volunteers (Amateur Radio Safety Foundation, Inc.).

Adopted for contingency communication by many Governmental and Non-Governmental agencies/organizations:

- Federal Emergency Management Agency
- Department of Homeland Security
- Emergency Management at all levels
- ARES, RACES, and EMCOMM/AUXCOMM teams
- International and American Red cross and the Salvation Army
- Maritime and Search and Rescue

What will the WINLINK system do for ARES?

Flexibility:

- Internet-only (Telnet) direct connections to Winlink.
- Radio link bridge to Internet e-mail.
- Radio-only store and forward messaging.
- Peer-to-peer connections between radio end-users.
- Familiar and simple e-mail client interface.

Interoperability:

- Bridge different radio capabilities (VHF/UHF/HF).
- Seamless integration with Internet e-mail.

Geographical dispersion and redundancy for reliability

- Formerly a system of servers located around the world (5)
- Now a Cloud based system

What will the WINLINK system do for ARES?

Continued:

- Standard e-mail format with many features.
  - ***Binary file attachments*** (pictures, pdf, spreadsheets).
  - Automatic message compression/decompression.
  - ***White listing*** used to prevent spam.
- ***Time independence.***
- Ability to collect messages while unattended.
- Good operation at most power levels.
- Not limited by station-to-station propagation.
- Message logging, and ICS report generation.
- Forms and template support.
- Wide adoption by EMCOMM related agencies.
- Automatic Repeat Request (ARQ) protocols built in.

ICS support in WINLINK

(Forms, Formats/Templates, Logs, and Files)

The RMS Express software suite has built in support for the ICS/NIMS framework and is responsive to ARES, AUXCOMM, EMCOMM requests for content.

ICS forms are built in:

ICS forms are built as message templates and can be sent without sending the form template (Lines, etc.) instead limiting the message to pure text. By having shared forms resident within the software, transmissions times can be kept to a minimum. ICS-309 Logs can be generated and sent as a template by the RMS software.

Agency Specific forms, formats, and templates:

A repository of User Specific forms, formats, and templates are also included and updated regularly within the RMS express suite.

Files and Attachments:

Files and attachments may be sent using the RMS Express software. However any file/attachment must be vetted before being sent. Transmission times for files/attachments can be extensive and alternatives should be used if possible. ***If a file/attachment must be sent, TELNET is the preferred mode.***

Types of WINLINK

WINLINK is software and system based using the RMS Express Software Suite. Other software may be used but RMS Express is the most recommended and maintained.

Main WINLINK mode types:

Telnet:

- Internet based email system similar to traditional email providers.

Packet:

- VHF or UHF (AX.25 Packet) based message sent to a radio gateway (RMS) and relayed to the internet cloud based server system (CMS).
- 1200 bps or 9600 bps.

VARA FM:

- Purchased software as the TNC (≤ 25,210 bps across 116 sub-carriers).
- Faster transmission rate, but software costs ≈ $69.
- Lower investment cost ≤ $200 total.

Types of WINLINK

Main WINLINK mode types Cont.:

ARDOP:

- HF based messaging using the RMS software as the TNC (≤ 4000 bps).
- Slower transmission rate, but free software based.
- Lower investment cost ≈ $125.

VARA (HF):

- HF based messaging using purchased software as the TNC (≤ 7,000 bps).
- Higher baud rate for shorter transmission times when compared to ARDOP.
- Same investment cost as ARDOP (≤ $200).
- *Capable of exceeding PACTOR data rates in ideal conditions*.

PACTOR:

- HF based message using specialized PACTOR equipment. Higher baud rate for shorter transmission times.
- *Most reliable HF mode in austere conditions.*
- Capable of using the SHARES network (PACTOR IV).
- Widely used by governmental organizations.
- Sizeable investment $1000 to $1900.

Types of WINLINK

Main WINLINK path types:

WINLINK:

- Traffic is passed through the traditional WINLINK system.

Peer to Peer (P2P):

- WINLINK (HF, VHF, UHF) message sent directly to the intended recipient via direct radio contact.

Radio Only:

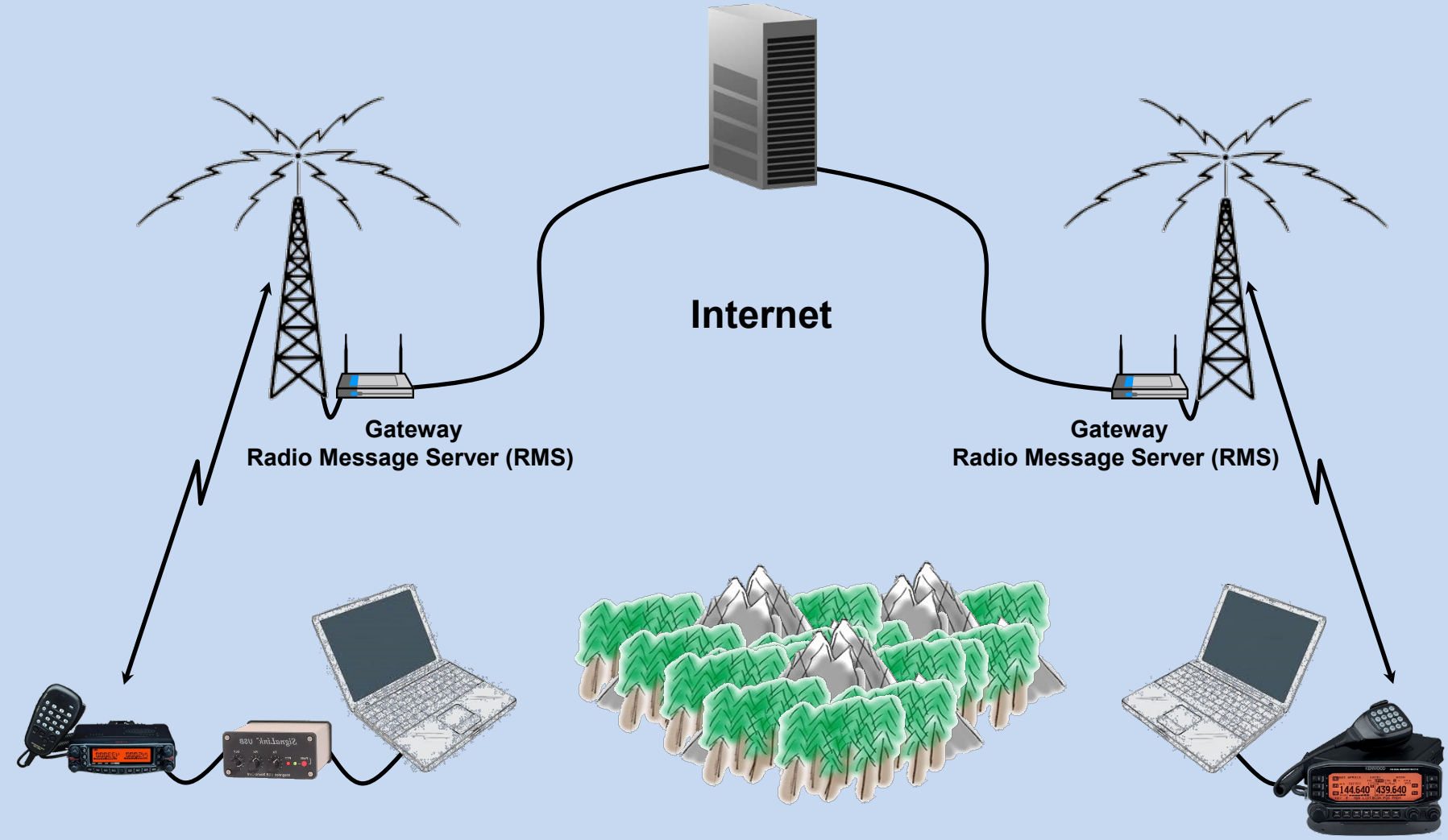
- WINLINK messages sent to intended recipient via a radio relay (MPS). This path does not rely on the internet to pass traffic. Must be configured in the Hybrid Network Parameters (Settings).

Telnet post office:

- This path uses a local area network (LAN) or a mesh network to pass traffic directly to a post office identified by callsign and IP address. Messages are held in the post office until the intended recipient checks into the post office.

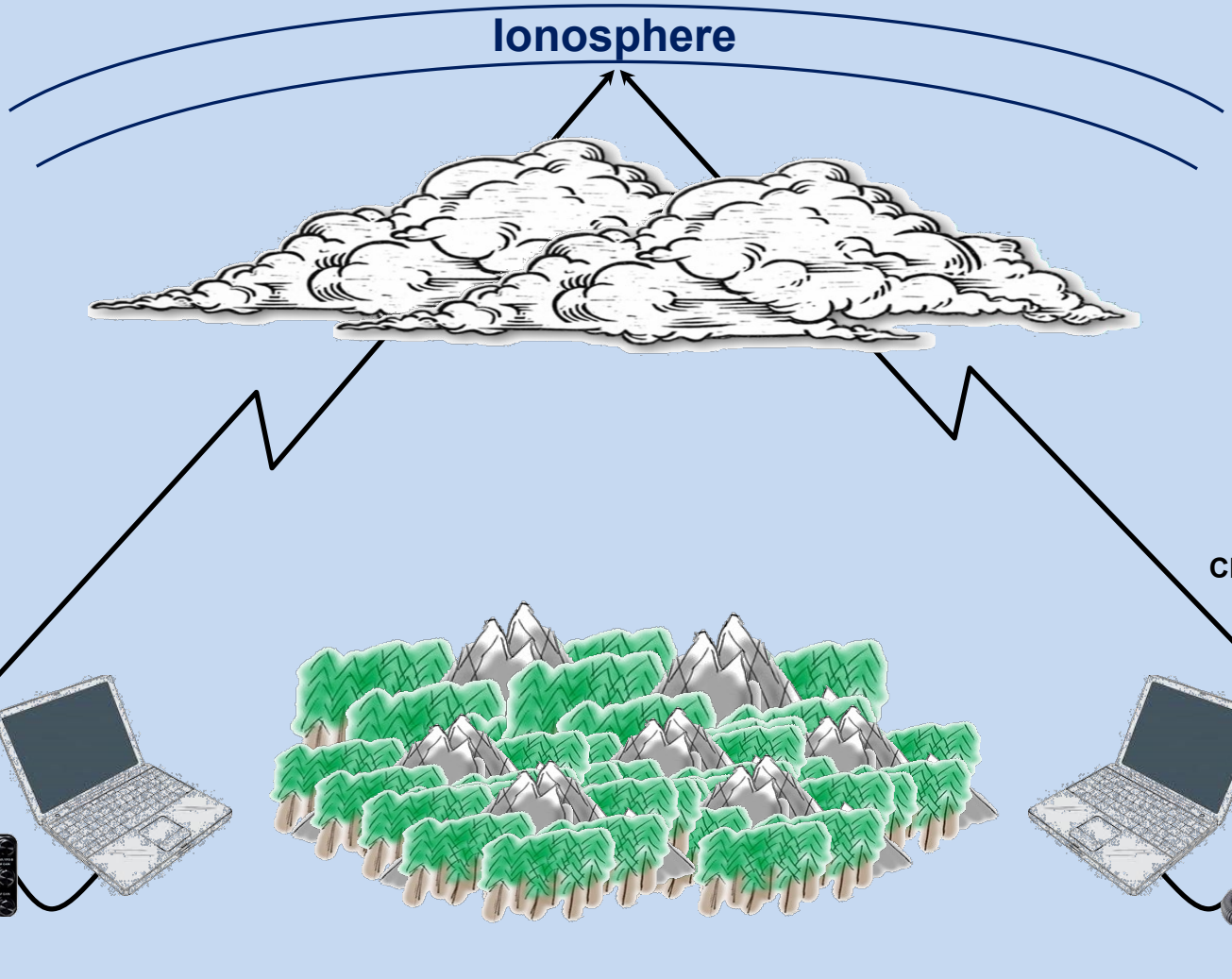
WINLINK Packet Path

Cloud Based
Common Message Server (CMS)



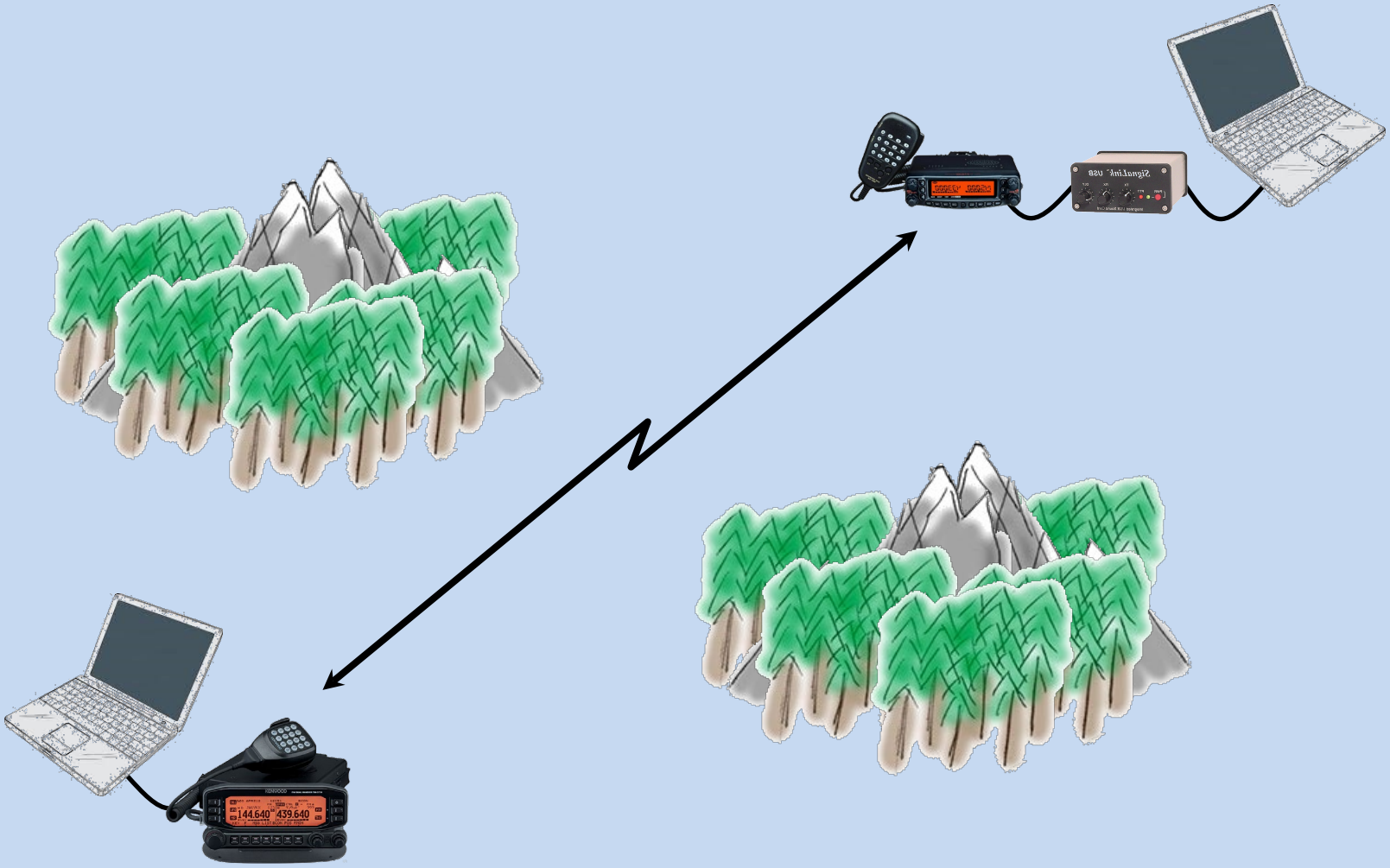
WINLINK Distant Gateway Path

Cloud Based
Common Message Server (CMS)



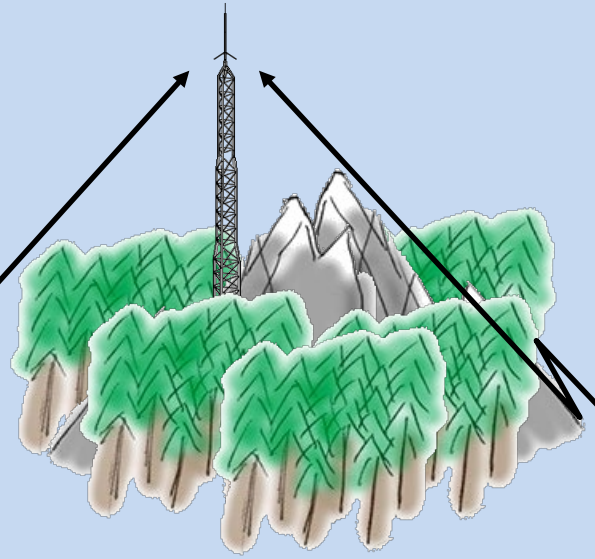
WINLINK P2P Packet Path

Direct



WINLINK Packet Path

Digipeater
Access to distant Gateway

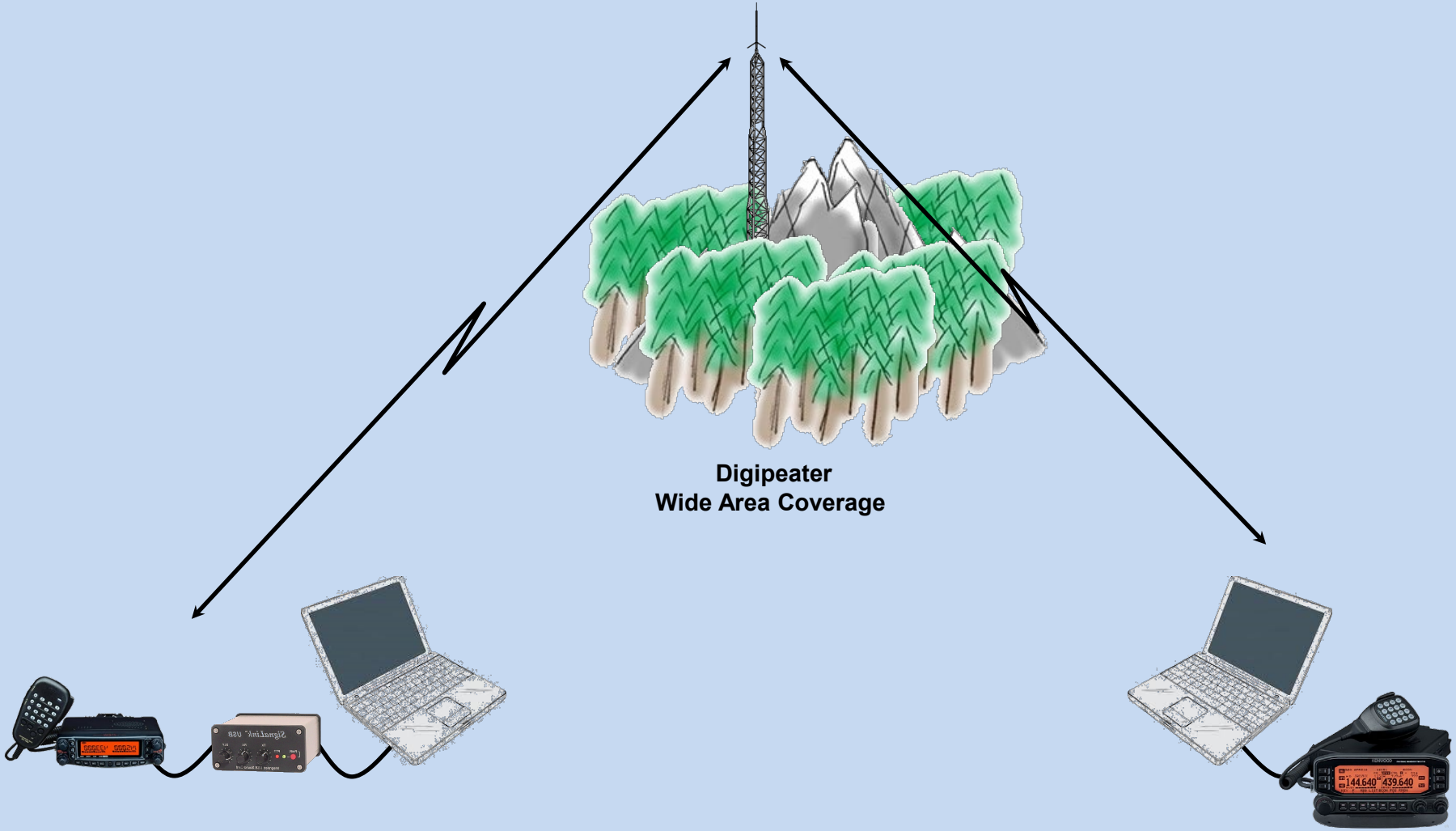


Digipeater
Wide Area Coverage

Cloud-Based-Servers

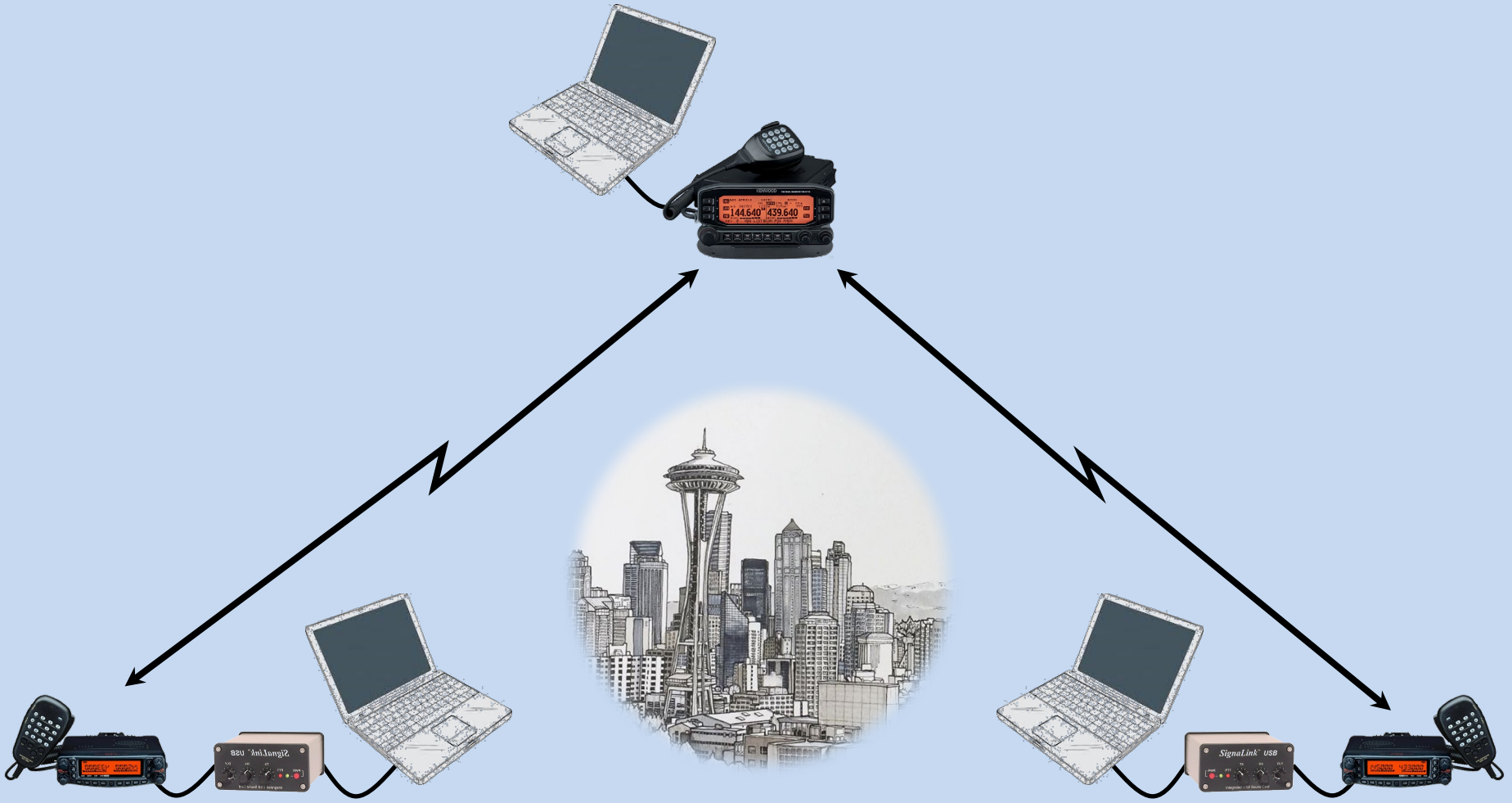
WINLINK P2P Packet Path

Digipeater
Access to distant Station

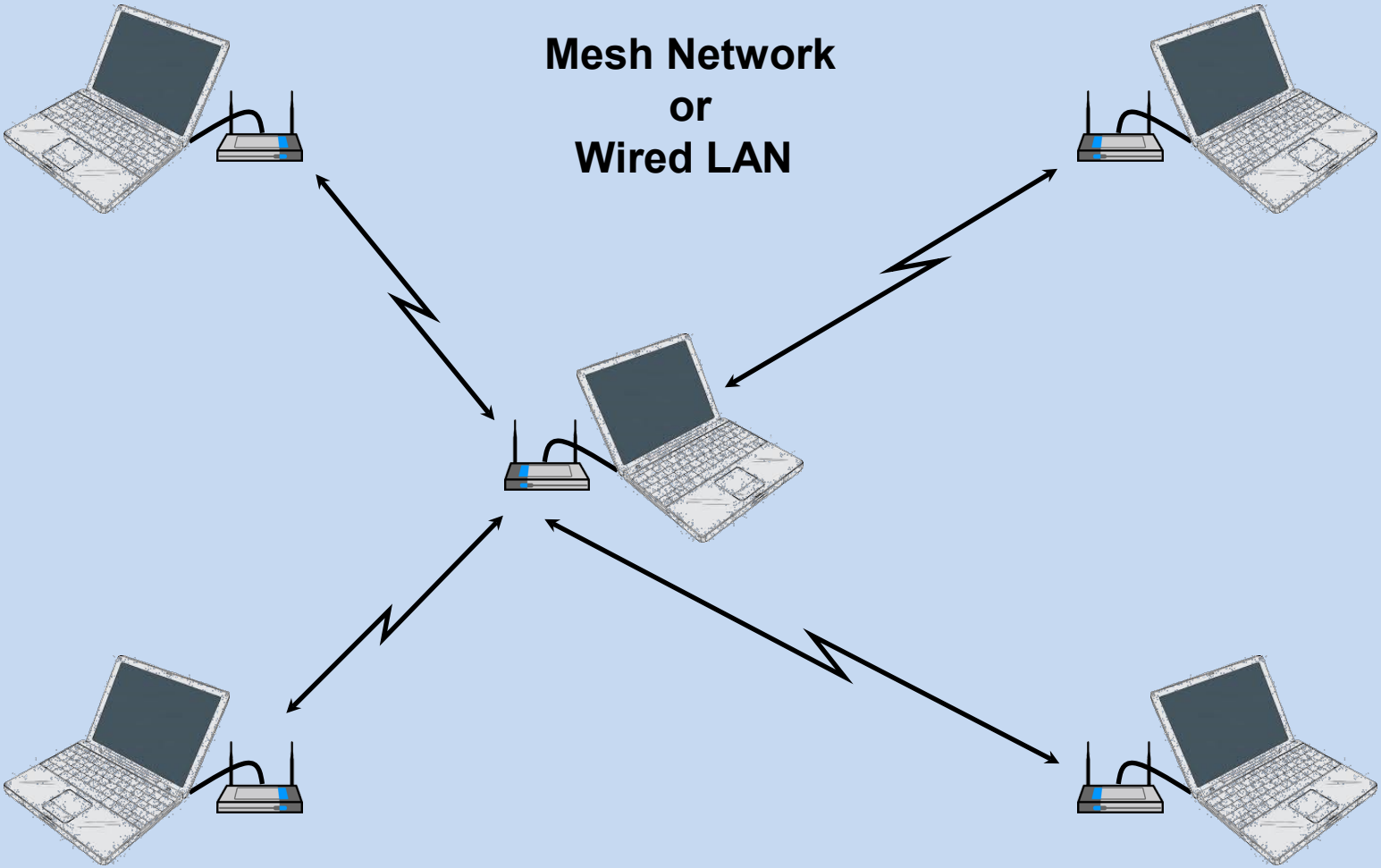


Radio Only Packet Path

Message Pickup Station (MPS)



TELNET Post Office

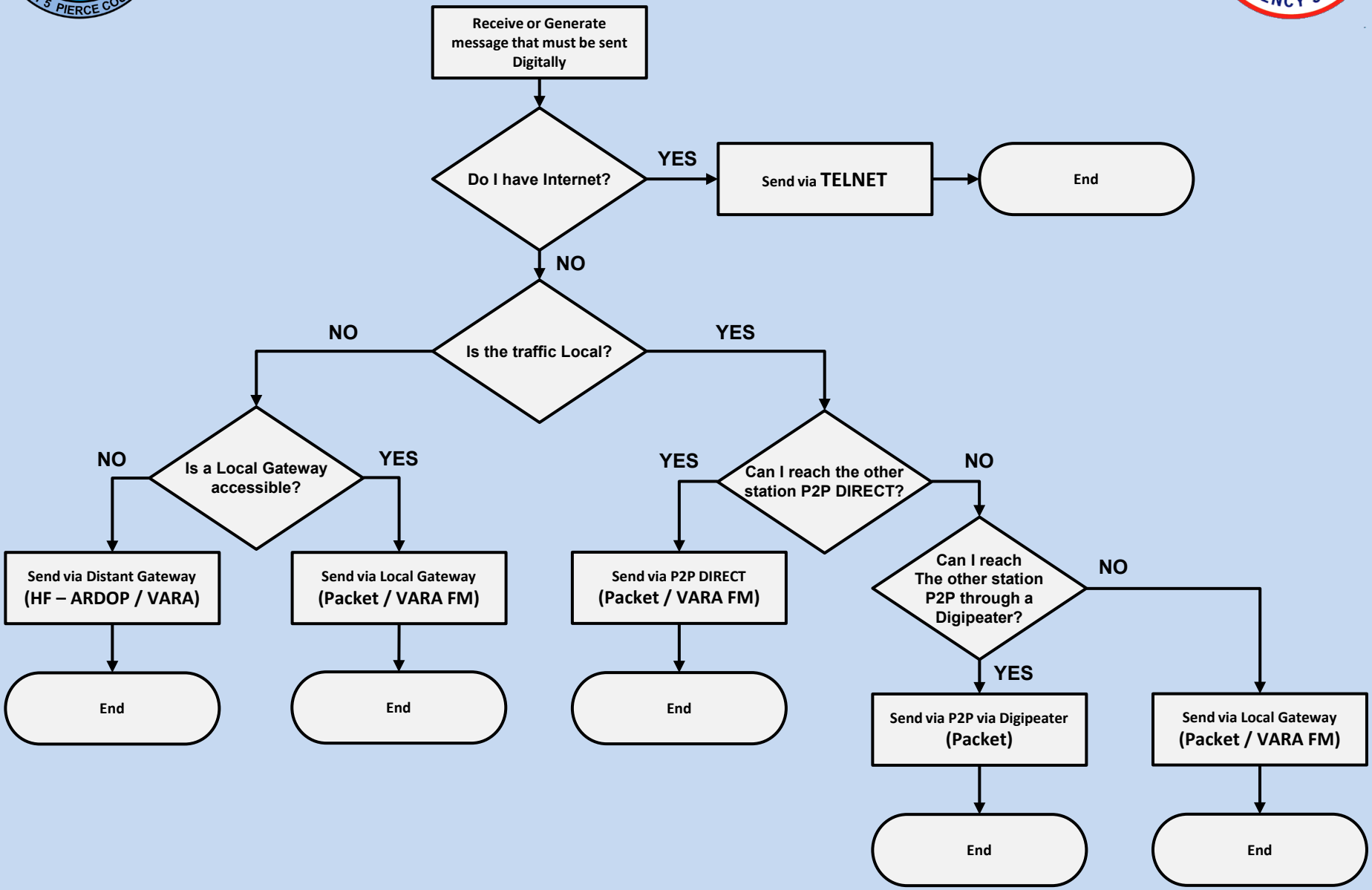


Why P2P – Why not Gateways?

District 5 ARES is prioritizing P2P & Digipeaters – WHY?

- Decrease load on Gateways – Collisions & Inefficiency
- **Gateways are *Internet dependent*** – P2P and Digipeaters are not
- Digipeaters are dumb devices which are simpler to field at remote locations where internet may not be available
- Digipeaters are more resilient than gateways (no computer)
- P2P and Digipeaters are not reliant on updates, internet, or routine administrator action

Winlink Decision Tree



What Equipment do I need to operate WINLINK?

VHF/UHF Packet:

- Computer running Windows (XP – 10)
- RMS Express software suite

Option 1:

- VHF/UHF radio with a data port (1200/9600 Baud) or a speaker/mic interface cable (1200 Baud only).
- Terminal Node Controller (Hardware or Software (UZ7HO)).
- Soundcard Interface (non hardware TNC).
  - Signalink (1200 bps Packet / Narrow Band VARA FM (≤ 9600 bps))
  - DRA-50 (full speed utilization)
  - Rim Lite (full speed utilization)

Option 2:

- Radio with a built in AX.25 TNC capable of two way communication (Kenwood TM-D700/710).

Note:

Not all APRS (AX.25 protocol) radios are capable of two way TNC communication (Yaesu).

What Equipment do I need to operate WINLINK?

HF ARDOP / VARA:

- Computer running Windows (XP – 10)
- RMS Express software suite

Option 1:

- HF radio with a data port.
- Soundcard Interface
  - Signalink
  - DRA-50
  - Rim Lite

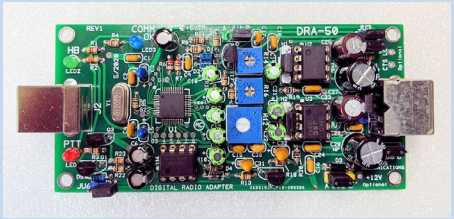
Option 2:

- Radio with a built in Soundcard Interface (IC-7100/7200/7300, FT-891/991, etc.)

Packet Interfaces

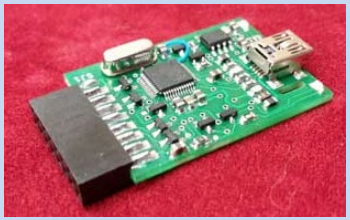
Signalink:

- Cost effective (≈ $125)
- Simple to setup and operate
- Multi mode
- Requires a software TNC (UZ7HO, Direwolf)
- Pre-made interface cables
- Limited to 1200 Baud



DRA-50:

- Cost effective (≈ $50 +)
- Simple to setup and operate
- Multi mode
- Requires a software TNC (UZ7HO, Direwolf)
- Pre-made interface cables
- High-Speed Capable



Rim Lite:

- Cost effective (≈ $50 +)
- Simple to setup and operate
- Multi mode
- Requires a software TNC (UZ7HO, Direwolf)
- Specialized or DB-9 connector
- Homebrew cables necessary in most circumstances
- High-Speed Capable

Other Sound Card based Interfaces:

- MFJ (≈ $100)
- RigExpert (≈ $200 - $500)
- RIGblaster (≈ $120 - $300)
- Homebrew

Packet Interfaces

Hardware TNC:

- Cost $100 to $1900
- Can be more complex to setup
- May or may not be Multi-mode
- May be used for other AX.25 based projects (Weather Station, BBS, etc.)
- May be capable of a higher baud rate (9600)
- No additional software required
- Less likely to cause software instability

What software do I need?

What Software do I need to run WINLINK?

The software requirements may be somewhat different depending on the individual user and station. Will you be using a Software or Hardware TNC?

Main software programs you may need:

RMS Express:

Main WINLINK software suite

RMS Log (Optional):

RMS Log is a standalone software to aid in producing ICS-309 logs directly from your RMS sent/received folders. This software has been replaced and imbedded within RMS Express, but will be available on the District 5 web site. The reason it is still in use, is that the current version within RMS Express does not support producing the data an anything other than PDF form. RMS Log will produce an CSV file that may be transmitted over the air.

UZ7HO Sound modem (Optional):

UZ7HO Soundmodem software TNC is a software dual-port Packet Radio TNC that uses a sound card as a modem and supports the AX.25 protocol. The UZ7HO Soundmodem has two TCP/IP interfaces to link with client applications.

Where do I get the Software?

Where do I get the Software?

RMS Express:

Google “RMS Express”, it will result in the following web address:

https://winlink.org/WinlinkExpress

Look for the Download link near the bottom of the page.

ITSHF propagation prediction program:

You will be prompted to download the program the first time you use ARDOP, a link will be provided by RMS Express.

RMS Log (Optional):

Legacy copies of the software will be available from the District 5 web site or other ARES members on request.

UZ7HO (Optional):

Google “UZ7HO”, it will result in the following web address:

http://uz7.ho.ua/packetradio.htm

Download the soundmodem113.zip file.

Installing RMS Express

(RMS Express Web Site)

1) Download and save the zip file from the web site:

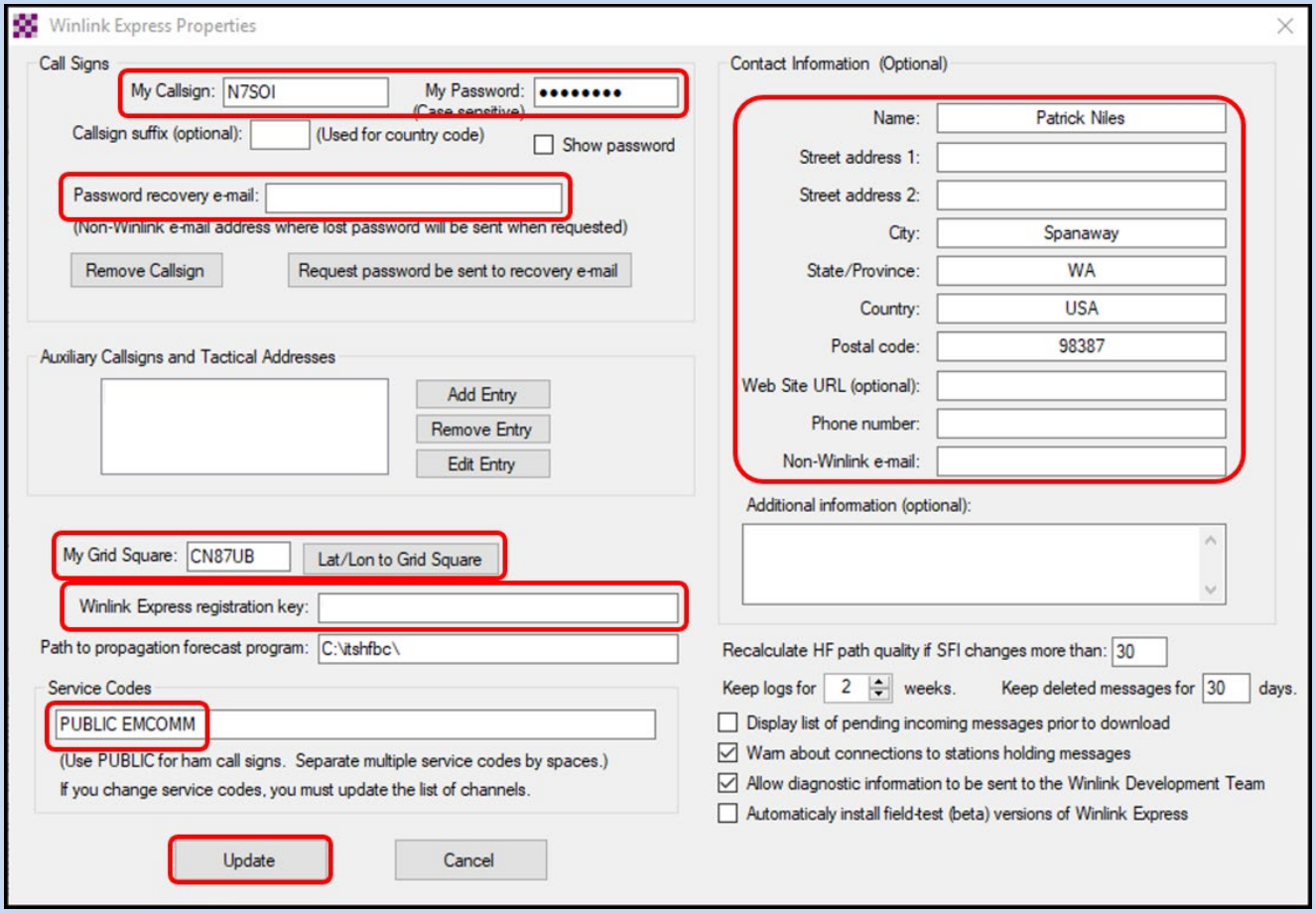
https://winlink.org/WinlinkExpress

Scroll to the bottom

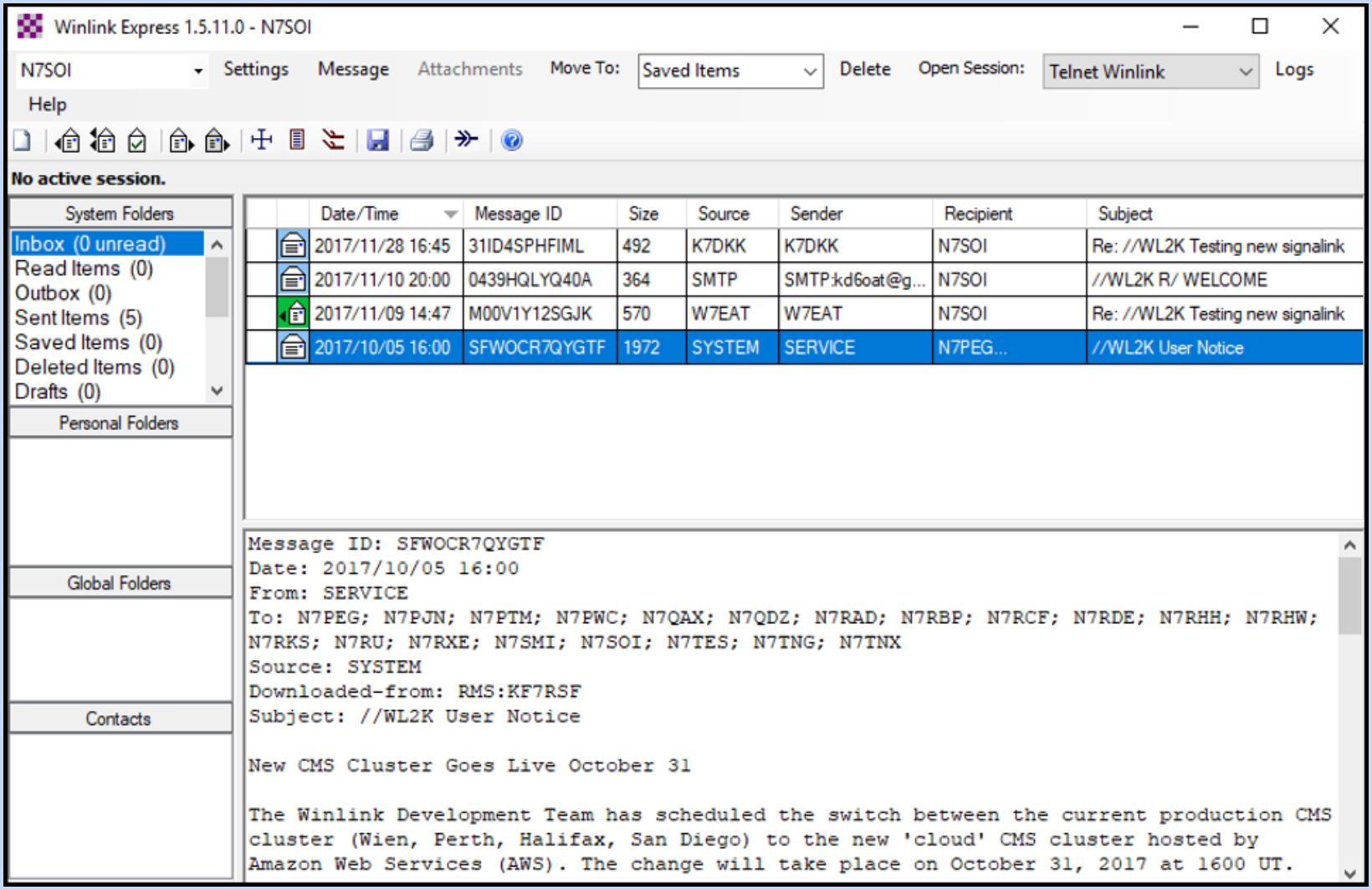
Initial setup of RMS Express

(Initial Setup)

1) Double Click on the RMS Express Icon.
2) The Winlink Express Properties, initial setup screen will pop-up.
3) Fill in the required information.

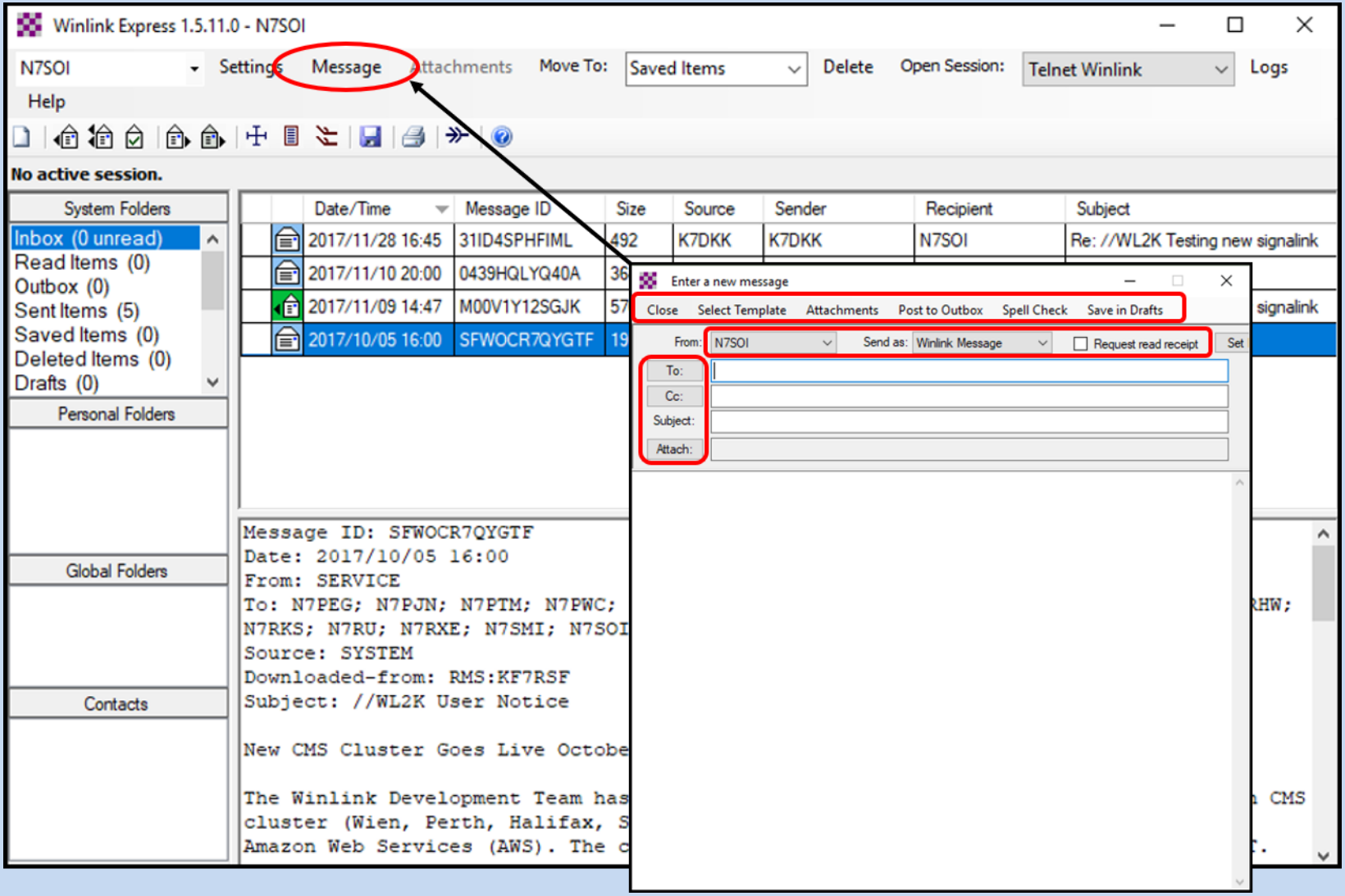


RMS Express Interface



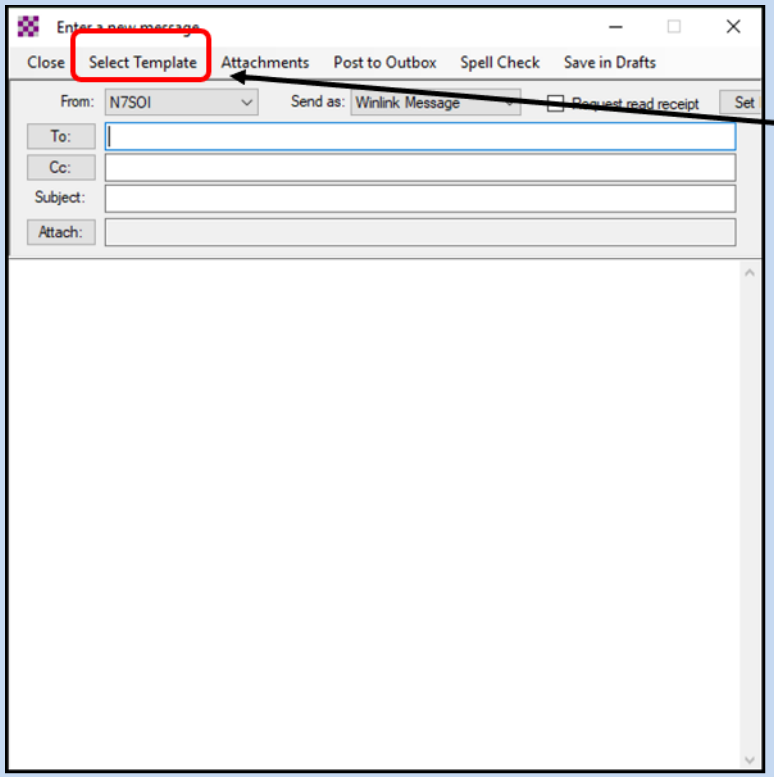
RMS Express Interface

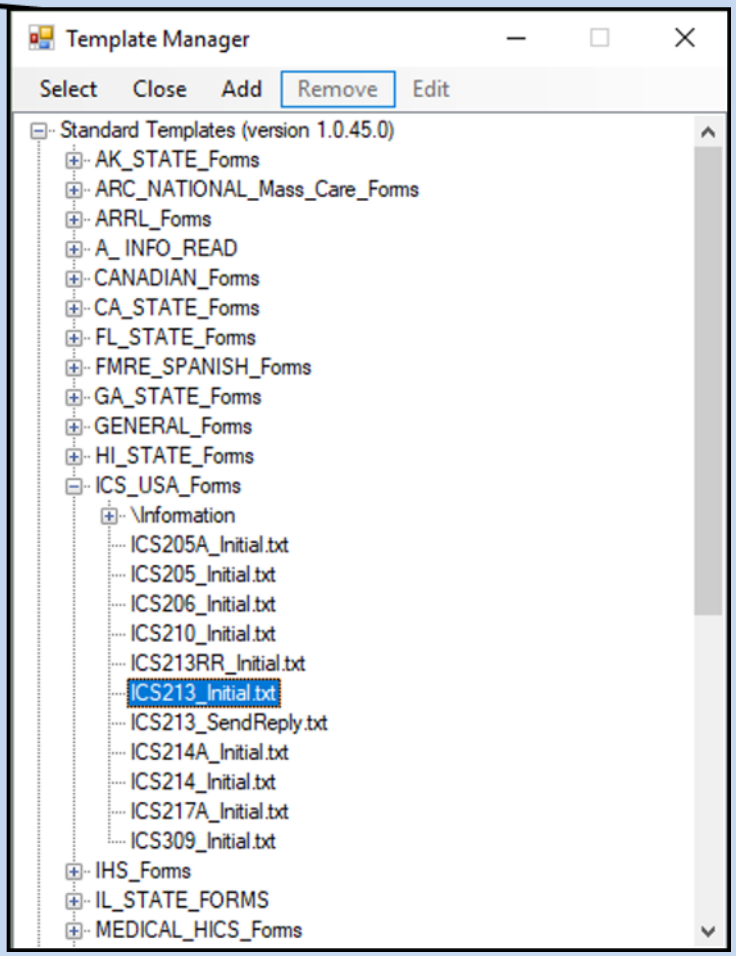
(Start a new Message)



RMS Express Interface

(Start a new Message using a Template)





RMS Express Interface

(ICS-213 Message Template)

General Message (ICS 213)

Load ICS213 INITIAL Data Form Instructions

1. Incident Name: Incident name is optional

2. To (Name/Position):

3. From (Name/Position):

4. Subject: 5. Date: 6. Time:

7. Message:

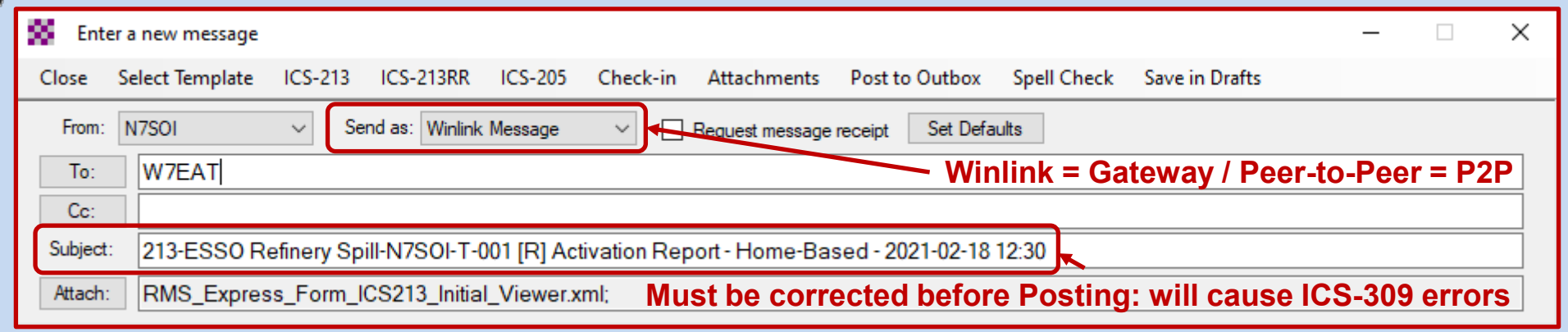
Be Brief and Concise

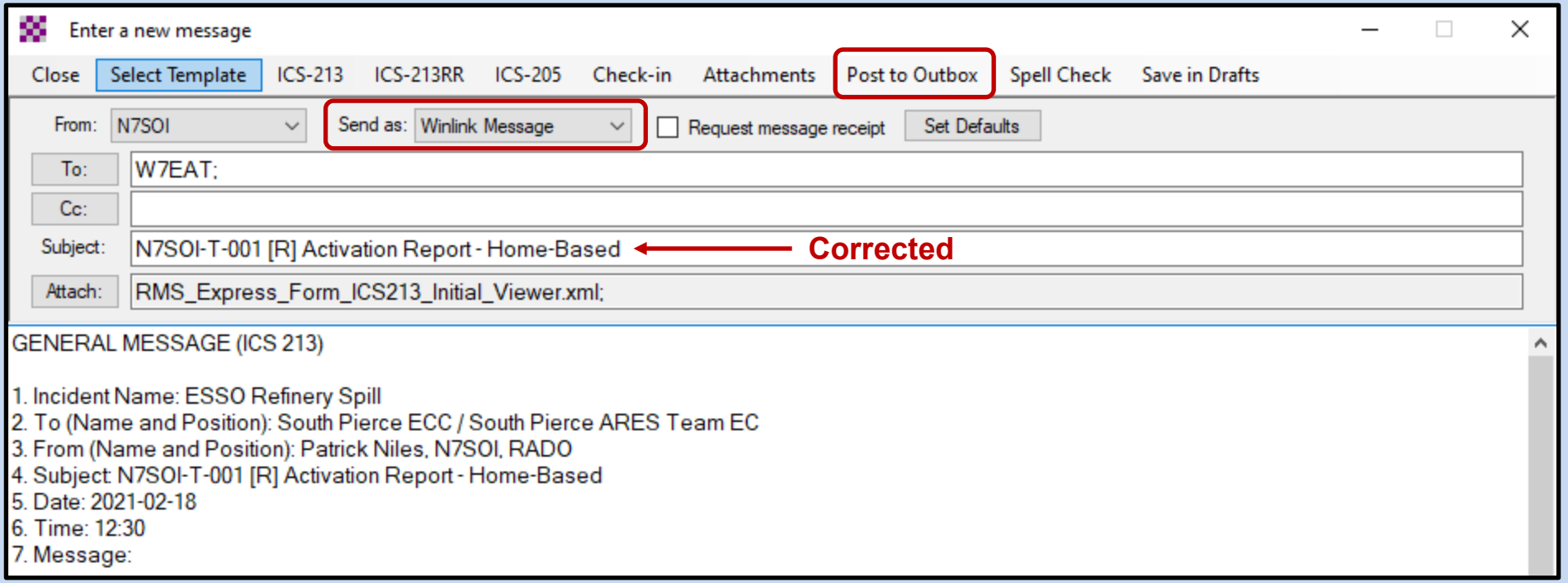
8. Approved by: Position / Title:

Save ICS213 INITIAL Data Submit Reset Form Ver 41.8

RMS Express Interface

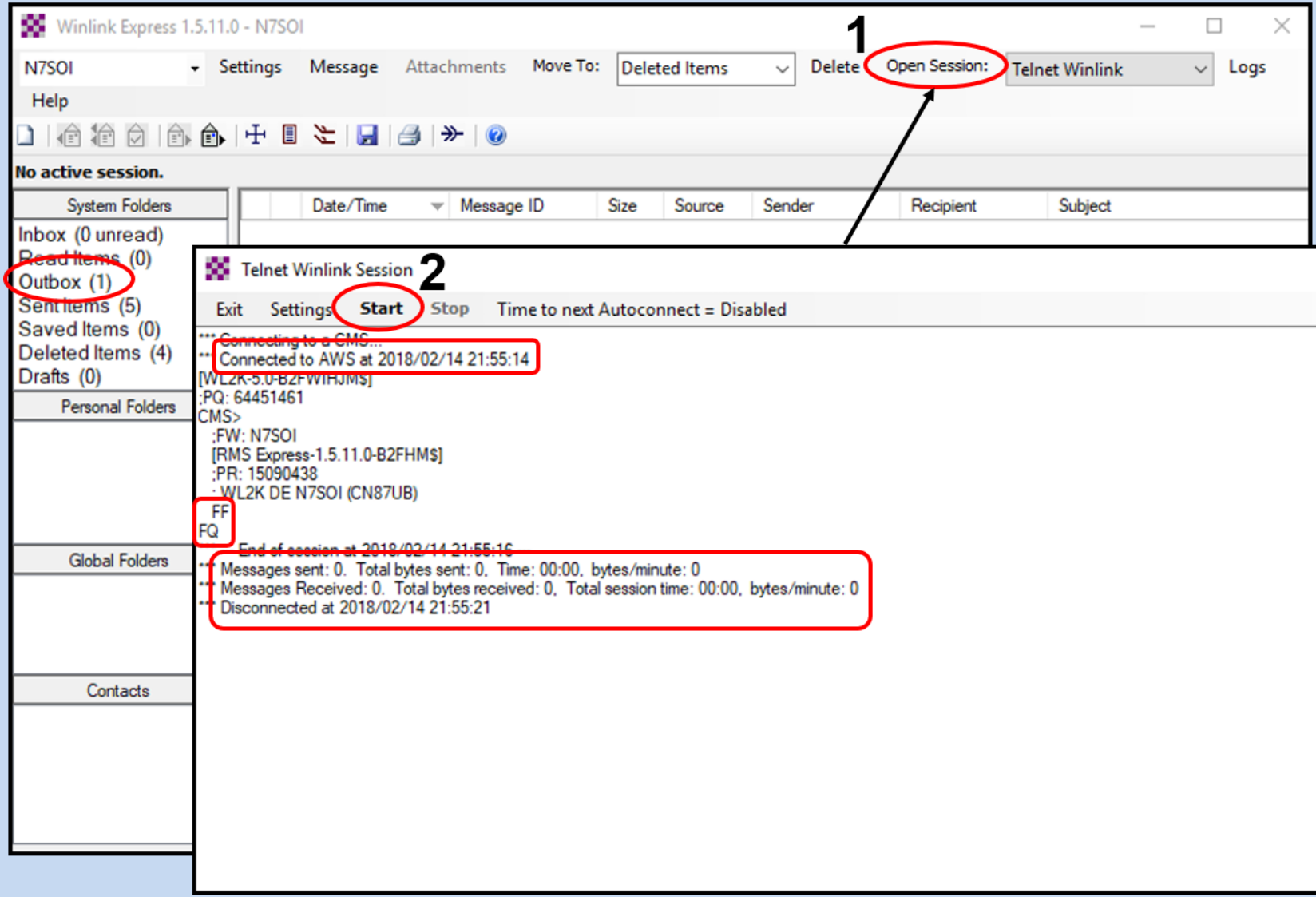
(Sending a Message)





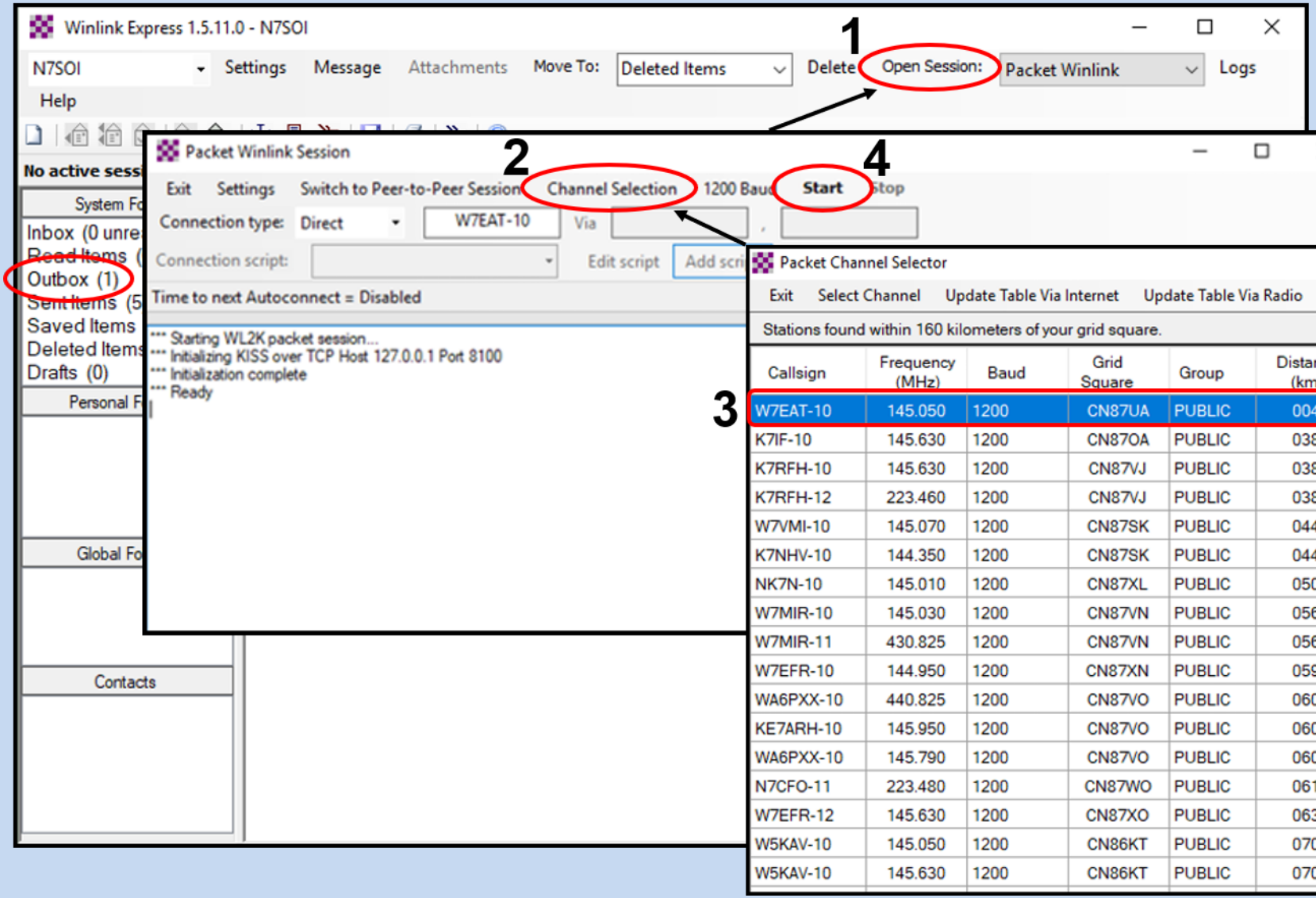
RMS Express Interface

(Telnet Session)



RMS Express Interface

(Packet Session)



Callsign	Frequency (MHz)	Baud	Grid Square	Group	Distance (km)	Bearing (Degrees)
W7EAT-10	145.050	1200	CN87UA	PUBLIC	004	180
K7IF-10	145.630	1200	CN87OA	PUBLIC	038	263
K7RFH-10	145.630	1200	CN87VJ	PUBLIC	038	009
K7RFH-12	223.460	1200	CN87VJ	PUBLIC	038	009
W7VMI-10	145.070	1200	CN87SK	PUBLIC	044	343
K7NHV-10	144.350	1200	CN87SK	PUBLIC	044	343
NK7N-10	145.010	1200	CN87XL	PUBLIC	050	022
W7MIR-10	145.030	1200	CN87VN	PUBLIC	056	006
W7MIR-11	430.825	1200	CN87VN	PUBLIC	056	006
W7EFR-10	144.950	1200	CN87XN	PUBLIC	059	019
WA6PXX-10	440.825	1200	CN87VO	PUBLIC	060	006
KE7ARH-10	145.950	1200	CN87VO	PUBLIC	060	006
WA6PXX-10	145.790	1200	CN87VO	PUBLIC	060	006
N7CFO-11	223.480	1200	CN87WO	PUBLIC	061	011
W7EFR-12	145.630	1200	CN87XO	PUBLIC	063	017
W5KAV-10	145.050	1200	CN86KT	PUBLIC	070	247
W5KAV-10	145.630	1200	CN86KT	PUBLIC	070	247

RMS Express Interface

(Packet Session)

Packet Winlink Session

Exit | Settings | Switch to Peer-to-Peer Session | Channel Selection | 1200 Baud | Start

Connection type: Direct | W7EAT-10 | Via

Connection script: | Edit script | Add script | Remove script

Received: 141 Sent: 284 Time to next Autoconnect = Disabled

```
*** Starting to call W7EAT-10
*** Opening KISS over TCP Host 127.0.0.1 Port 8100
*** Connecting to W7EAT-10
*** Connected to W7EAT-10 at 2018/02/15 00:00:58

Welcome to the Eatonville Amateur Radio Team Winlink RMS Gateway on Graham Hill.
[WL2K-5.0-B2FWIHJM$]
;PQ: 47996401
CMS via W7EAT >
  ;FW: N7SOI
  [RMS Express-1.5.11.0-B2FHM$]
  ;PR: 27639989
  ; W7EAT-10 DE N7SOI (CN87UB)
  FC EM UE1QB1KQGNB7 147 142 0
  F> 9C
FS Y
*** Sending UE1QB1KQGNB7.
FF
*** Completed send of message UE1QB1KQGNB7
*** Sent 1 message.  Bytes: 162,  Time: 00:03,  bytes/minute: 3021
  FQ
*** --- End of session at 2018/02/15 00:01:16 ---
*** Messages sent: 1.  Total bytes sent: 162,  Time: 00:18,  bytes/minute: 535
*** Messages Received: 0.  Total bytes received: 0,  Total session time: 00:18,  bytes/minute: 0
*** Disconnecting
*** Disconnecting due to timeout
*** Disconnected at 2018/02/15 00:01:29

*** Disconnect reported.
```

SoundModem by UZ7HO - Ver 0.97b - [AFSK AX.25 1200bd]

Settings | View | Clear monitor | Calibration | About

A: AFSK AX.25 1200bd | 1700 | DCD threshold | Hold pointers

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1:Fm N7SOI To W7EAT-10 <SABM C P> [16:00:56T]
1:Fm W7EAT-10 To N7SOI <UA R F> [16:00:57R] [+++]
1:Fm W7EAT-10 To N7SOI <I C R0 S0 Pid=F0 Len=82> [16:00:58R] [+++]
Welcome to the Eatonville Amateur Radio Team Winlink RMS Gateway on Graham Hill.

1:Fm N7SOI To W7EAT-10 <RR R R1> [16:00:59T]
1:Fm W7EAT-10 To N7SOI <I C R0 S1 Pid=F0 Len=21> [16:01:00R] [+++]
[WL2K-5.0-B2FWIHJM$]

1:Fm W7EAT-10 To N7SOI <I C R0 S2 Pid=F0 Len=14> [16:01:01R] [+++]
;PQ: 47996401

1:Fm N7SOI To W7EAT-10 <RR R R3> [16:01:01T]
1:Fm W7EAT-10 To N7SOI <I C R0 S3 Pid=F0 Len=16> [16:01:03R] [+++]
CMS via W7EAT >

1:Fm N7SOI To W7EAT-10 <I C R4 S0 Pid=F0 Len=11> [16:01:03T]
;FW: N7SOI

1:Fm N7SOI To W7EAT-10 <I C R4 S1 Pid=F0 Len=30> [16:01:03T]
[RMS Express-1.5.11.0-B2FHM$]

1:Fm N7SOI To W7EAT-10 <I C R4 S2 Pid=F0 Len=14> [16:01:04T]
;PR: 27639989

1:Fm N7SOI To W7EAT-10 <I C R4 S3 Pid=F0 Len=29> [16:01:04T]
; W7EAT-10 DE N7SOI (CN87UB)

1:Fm W7EAT-10 To N7SOI <RR R R2> [16:01:06R] [+++]
1:Fm W7EAT-10 To N7SOI <RR R R4> [16:01:06R] [+++]
1:Fm N7SOI To W7EAT-10 <I C R4 S4 Pid=F0 Len=29> [16:01:06T]
FC EM UE1QB1KQGNB7 147 142 0

1:Fm N7SOI To W7EAT-10 <I C R4 S5 Pid=F0 Len=6> [16:01:06T]
F> 9C

1:Fm W7EAT-10 To N7SOI <I C R6 S4 Pid=F0 Len=5> [16:01:08R] [+++]
FS Y
```

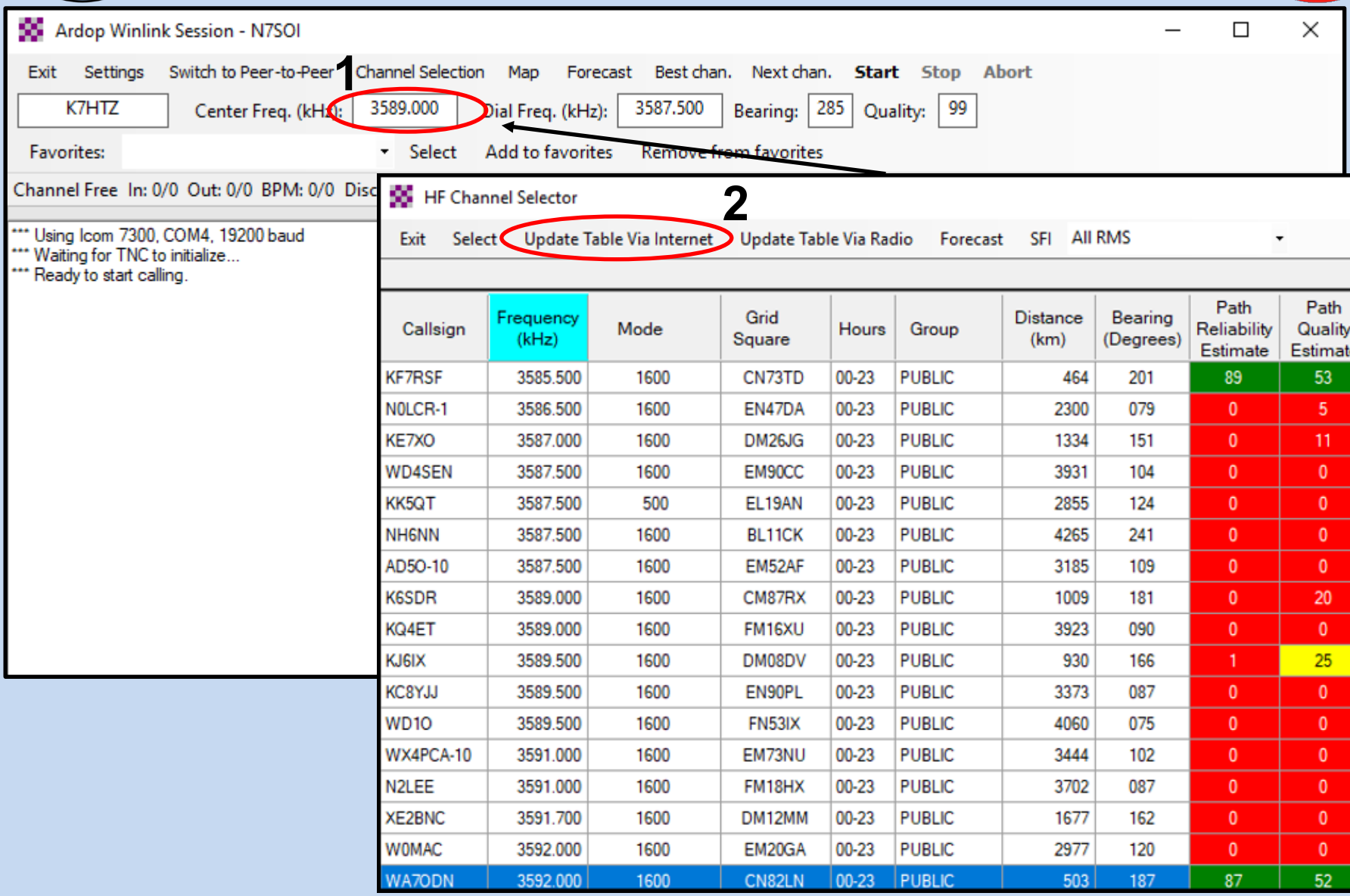
MyCall	DestCall	Status	Sent pkts	Sent bytes	Rcvd pkts	Rcvd bytes	Rcvd FC	CPS TX	CP

1000 2000 3000

UZ7HO Sound Modem Window

RMS Express Interface

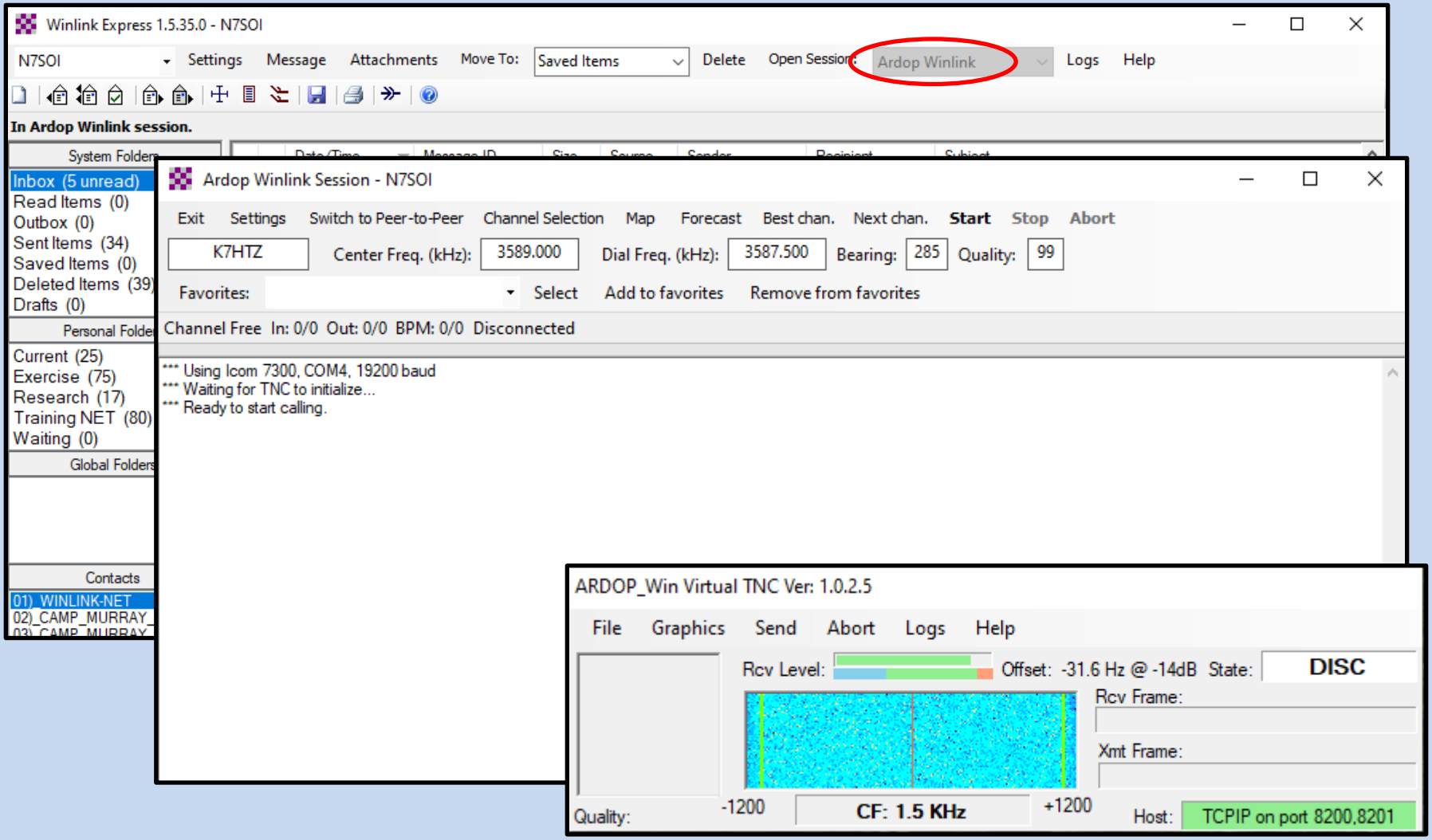
(ARDOP Session)



Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
KF7RSF	3585.500	1600	CN73TD	00-23	PUBLIC	464	201	89	53
N0LCR-1	3586.500	1600	EN47DA	00-23	PUBLIC	2300	079	0	5
KE7XO	3587.000	1600	DM26JG	00-23	PUBLIC	1334	151	0	11
WD4SEN	3587.500	1600	EM90CC	00-23	PUBLIC	3931	104	0	0
KK5QT	3587.500	500	EL19AN	00-23	PUBLIC	2855	124	0	0
NH6NN	3587.500	1600	BL11CK	00-23	PUBLIC	4265	241	0	0
AD5O-10	3587.500	1600	EM52AF	00-23	PUBLIC	3185	109	0	0
K6SDR	3589.000	1600	CM87RX	00-23	PUBLIC	1009	181	0	20
KQ4ET	3589.000	1600	FM16XU	00-23	PUBLIC	3923	090	0	0
KJ6IX	3589.500	1600	DM08DV	00-23	PUBLIC	930	166	1	25
KC8YJJ	3589.500	1600	EN90PL	00-23	PUBLIC	3373	087	0	0
WD1O	3589.500	1600	FN53IX	00-23	PUBLIC	4060	075	0	0
WX4PCA-10	3591.000	1600	EM73NU	00-23	PUBLIC	3444	102	0	0
N2LEE	3591.000	1600	FM18HX	00-23	PUBLIC	3702	087	0	0
XE2BNC	3591.700	1600	DM12MM	00-23	PUBLIC	1677	162	0	0
W0MAC	3592.000	1600	EM20GA	00-23	PUBLIC	2977	120	0	0
WA7ODN	3592.000	1600	CN82LN	00-23	PUBLIC	503	187	87	52

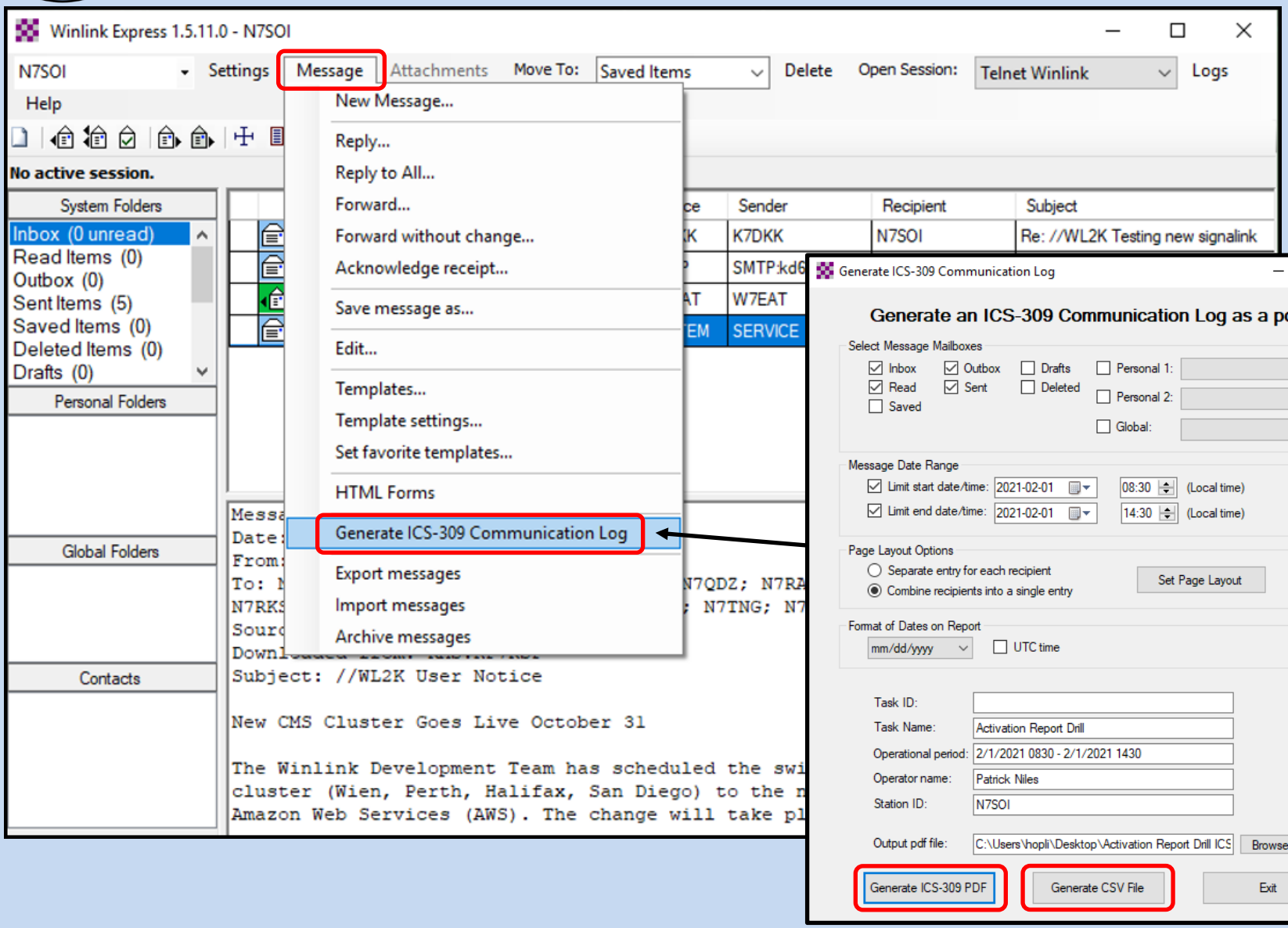
RMS Express Interface

(ARDOP Session)



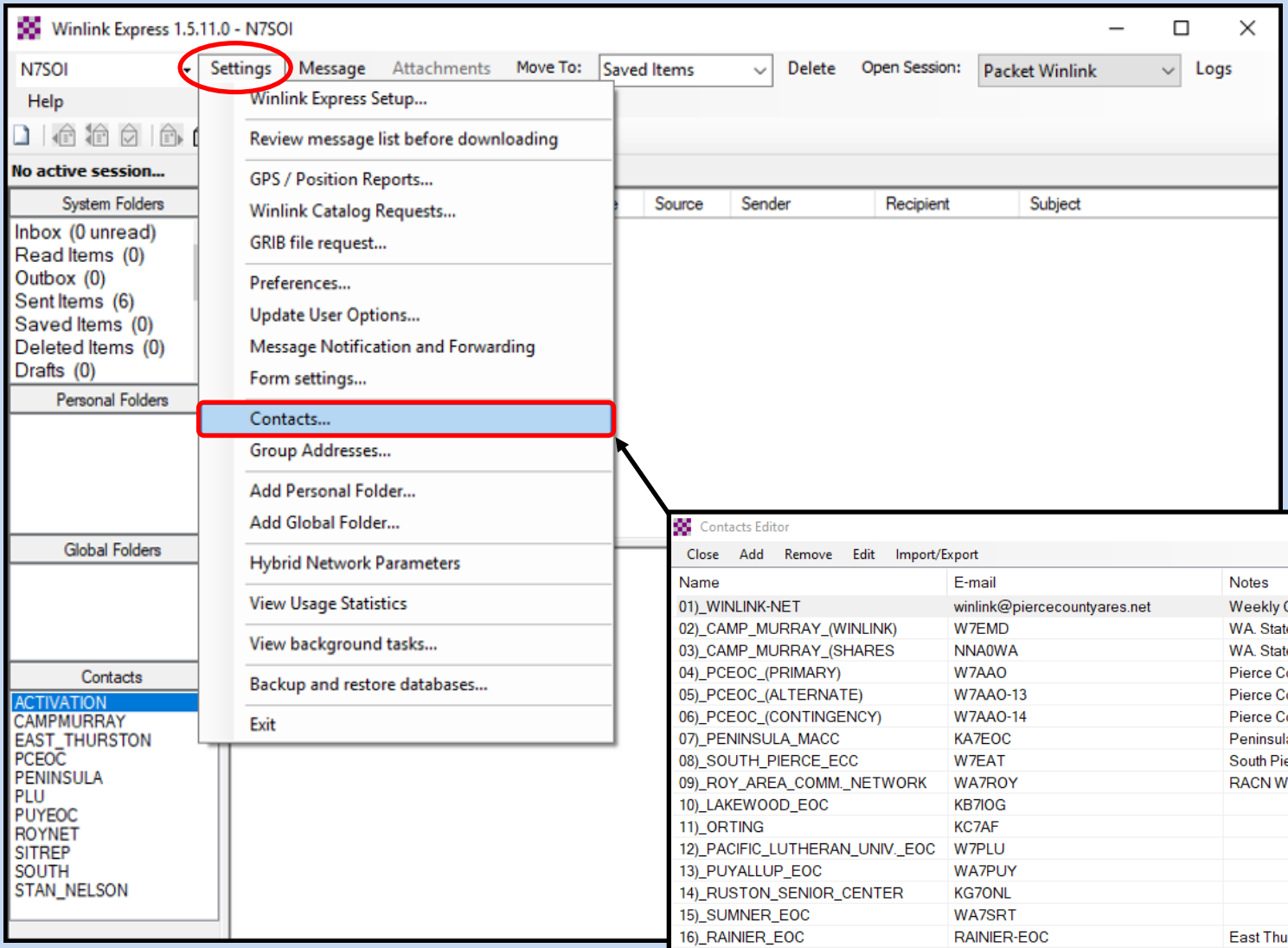
RMS Express Advanced

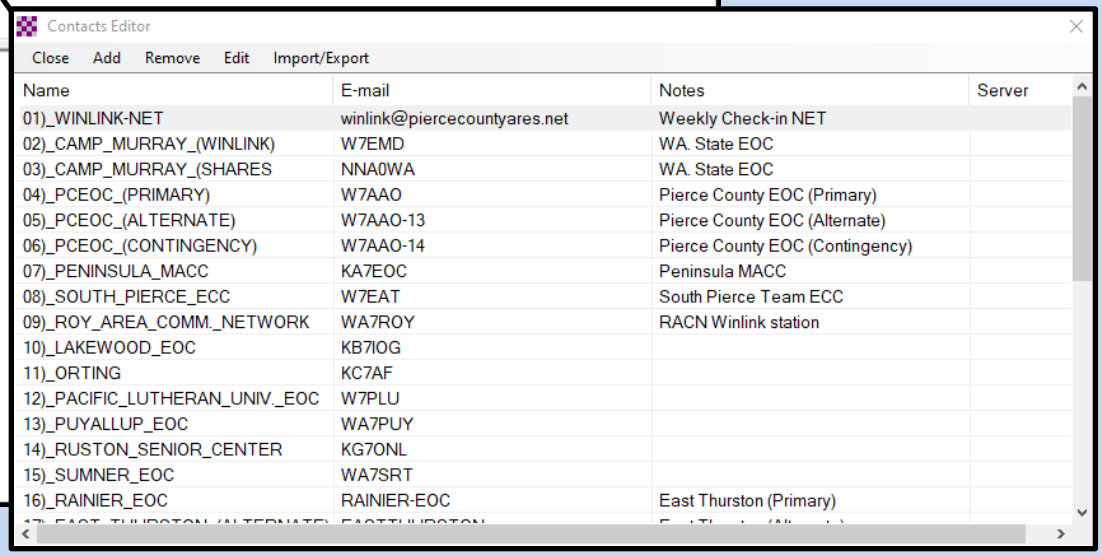
(ICS-309)



RMS Express Advanced

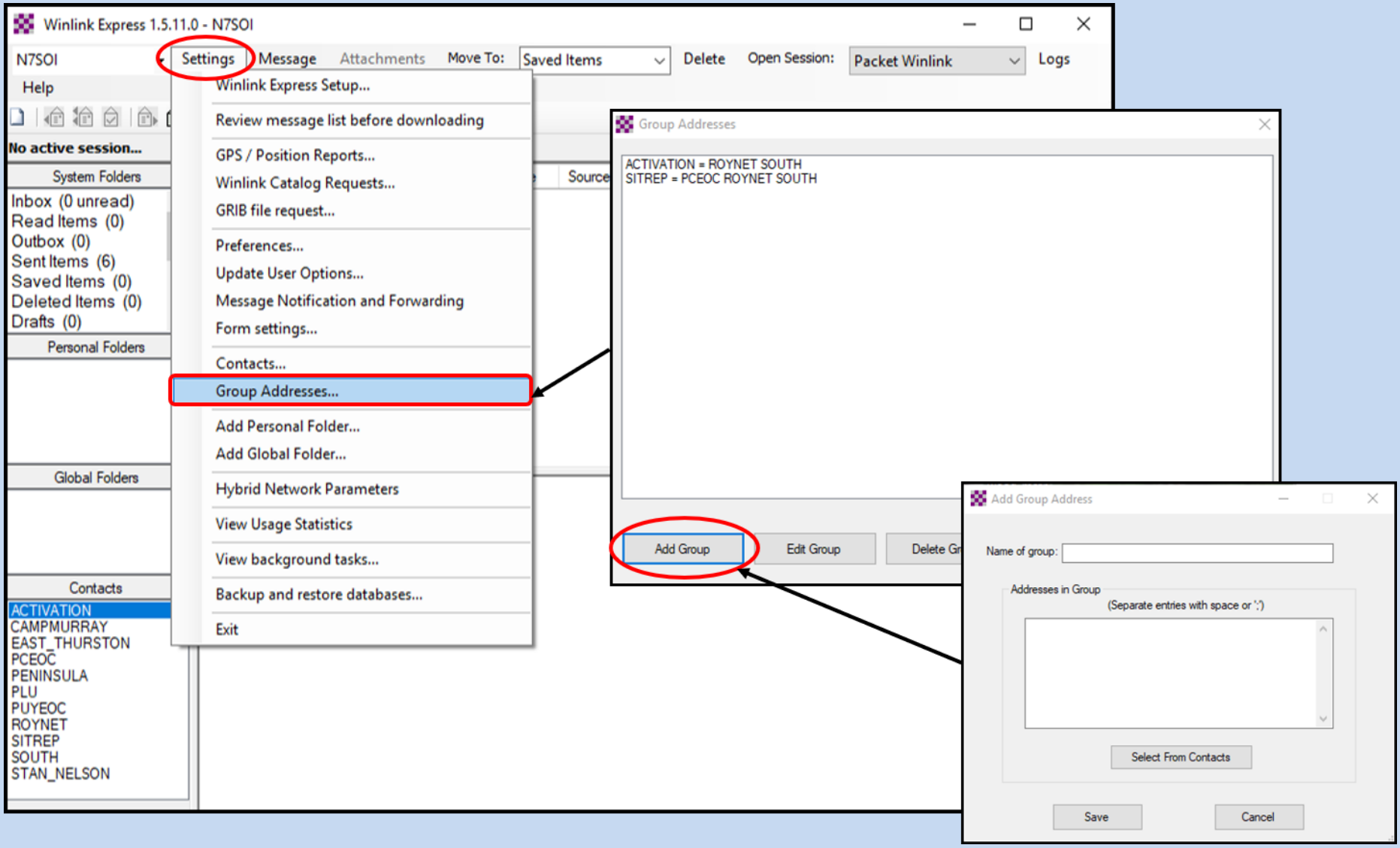
(Address Book Contacts)





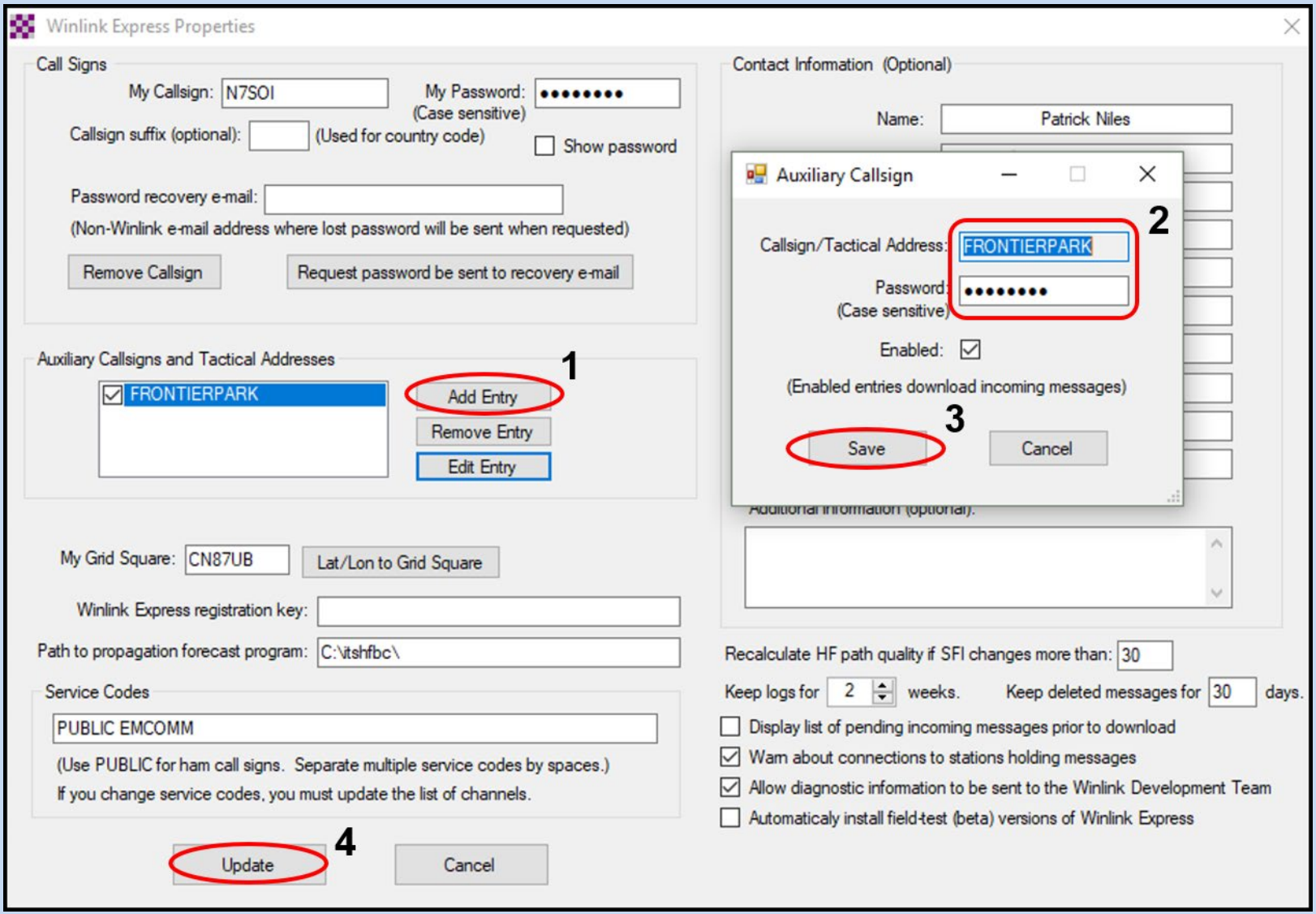
RMS Express Advanced

(Group Address Contacts)



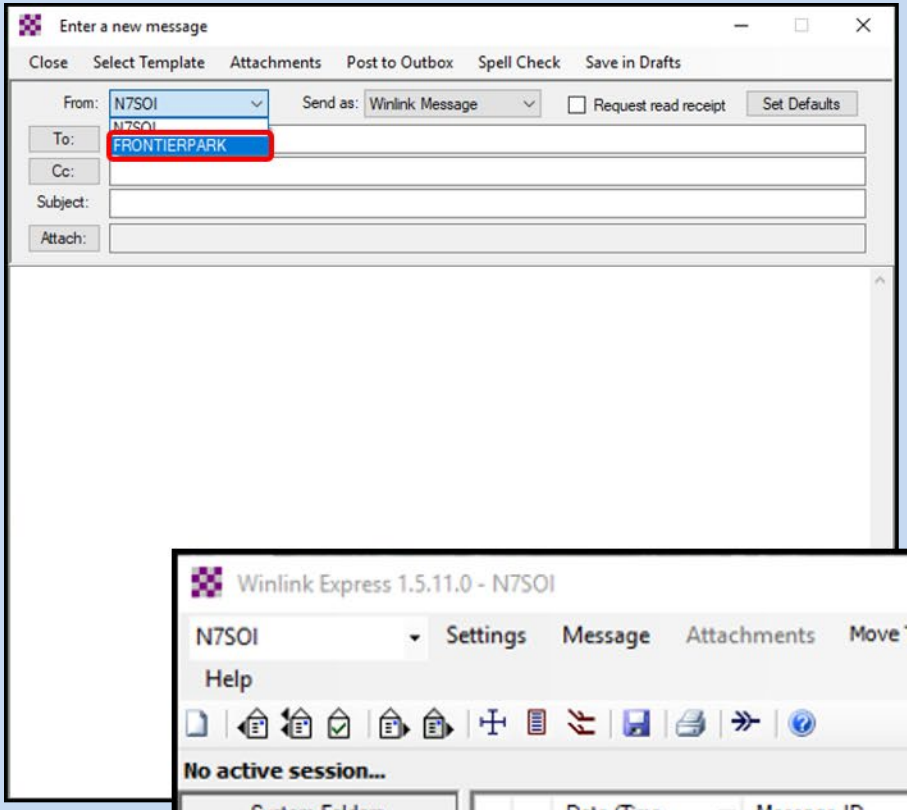
RMS Express Advanced

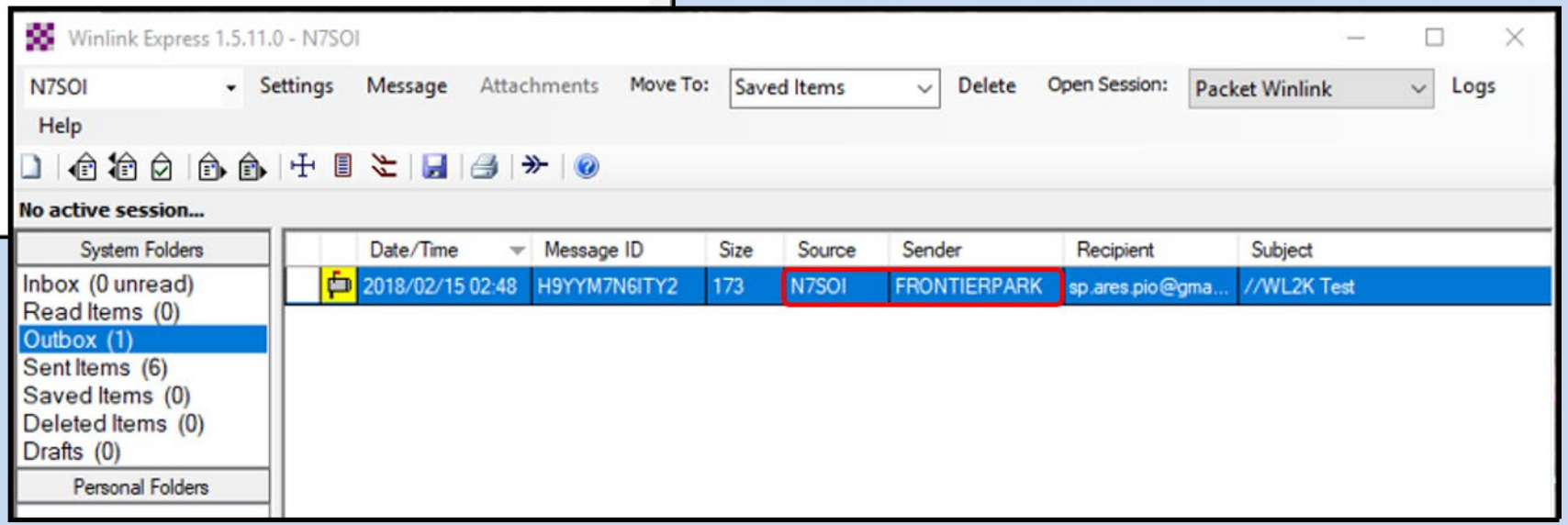
(Tactical Addresses)



RMS Express Advanced

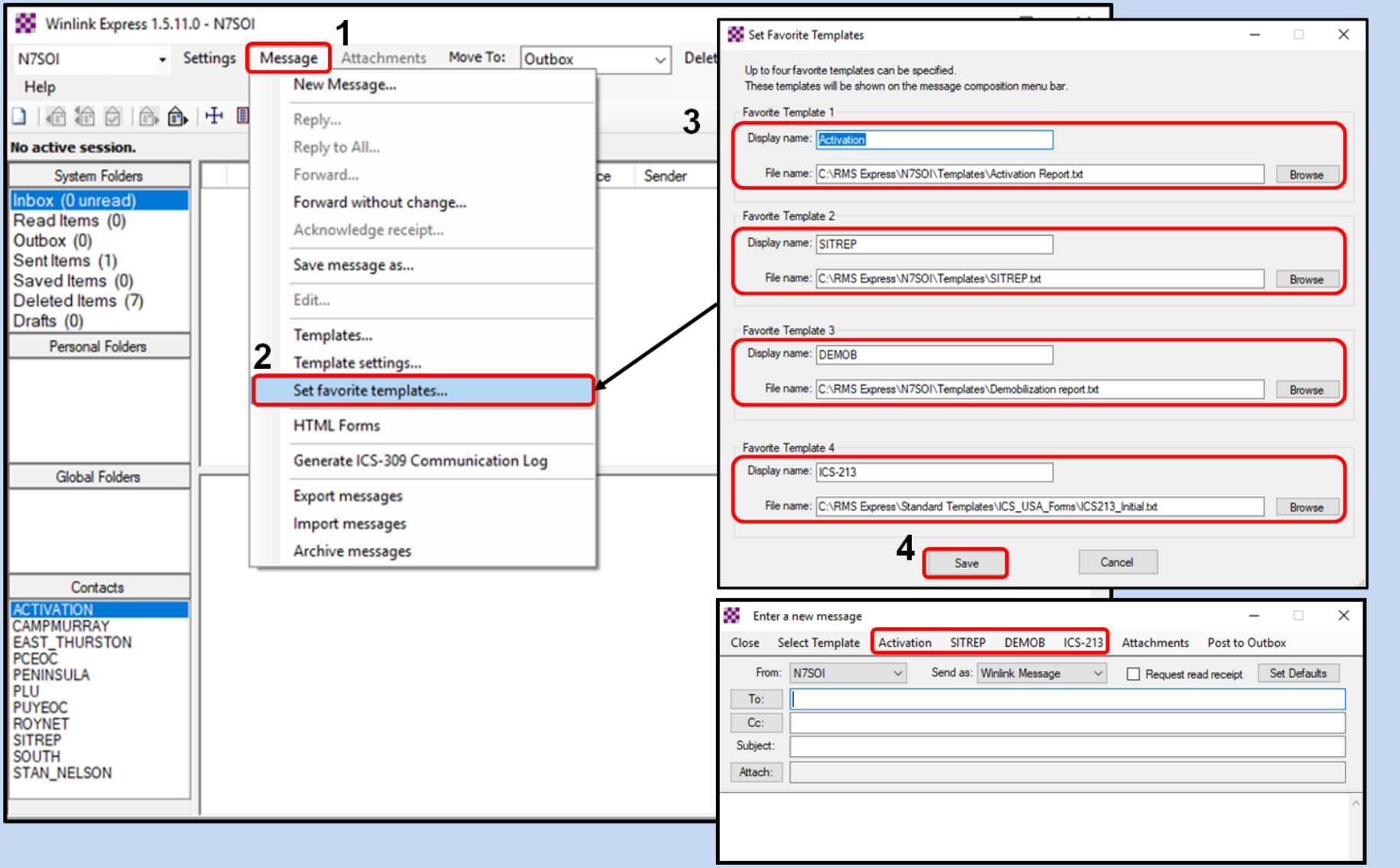
(Tactical Addresses)





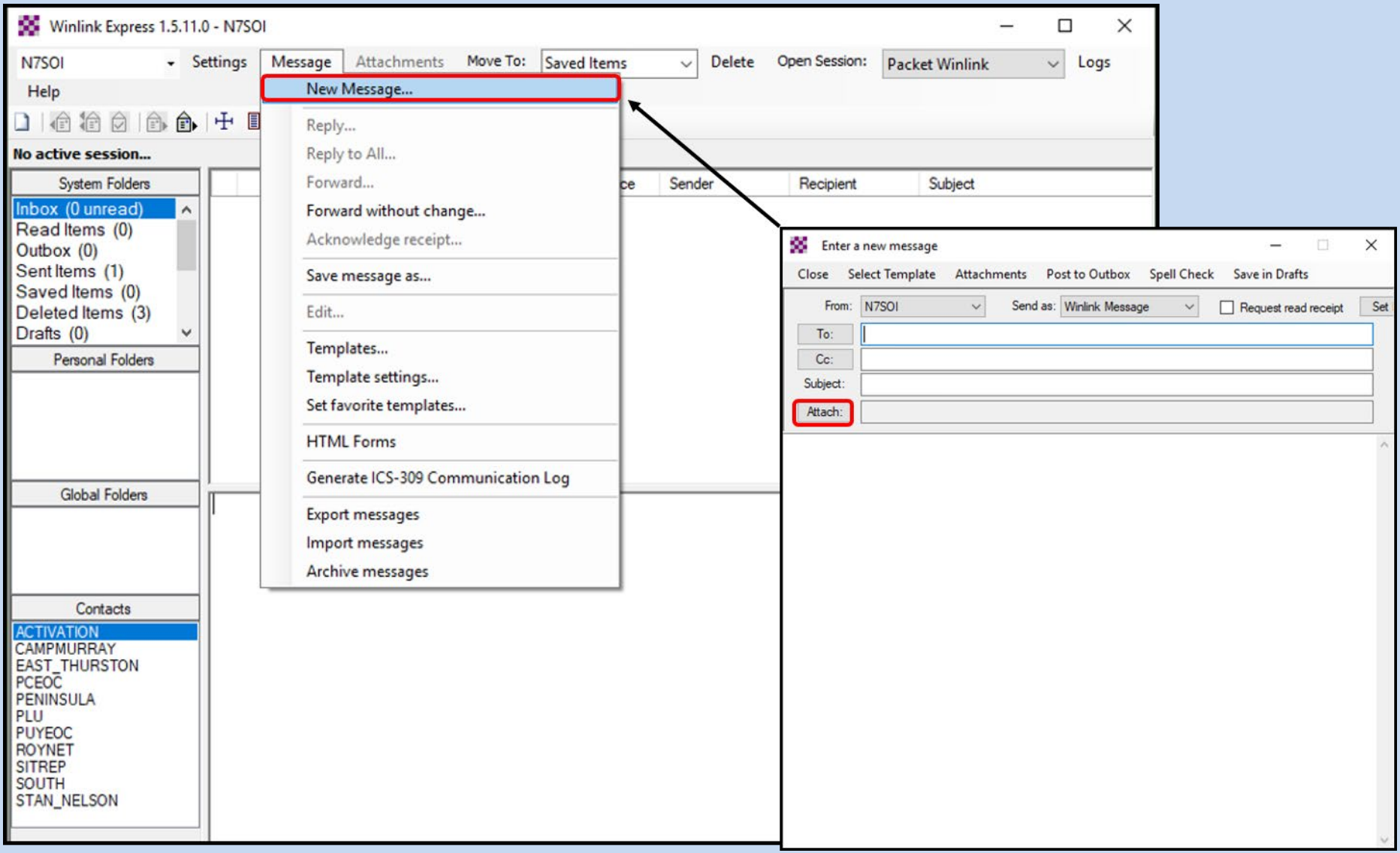
RMS Express Advanced

(Favorite Templates)



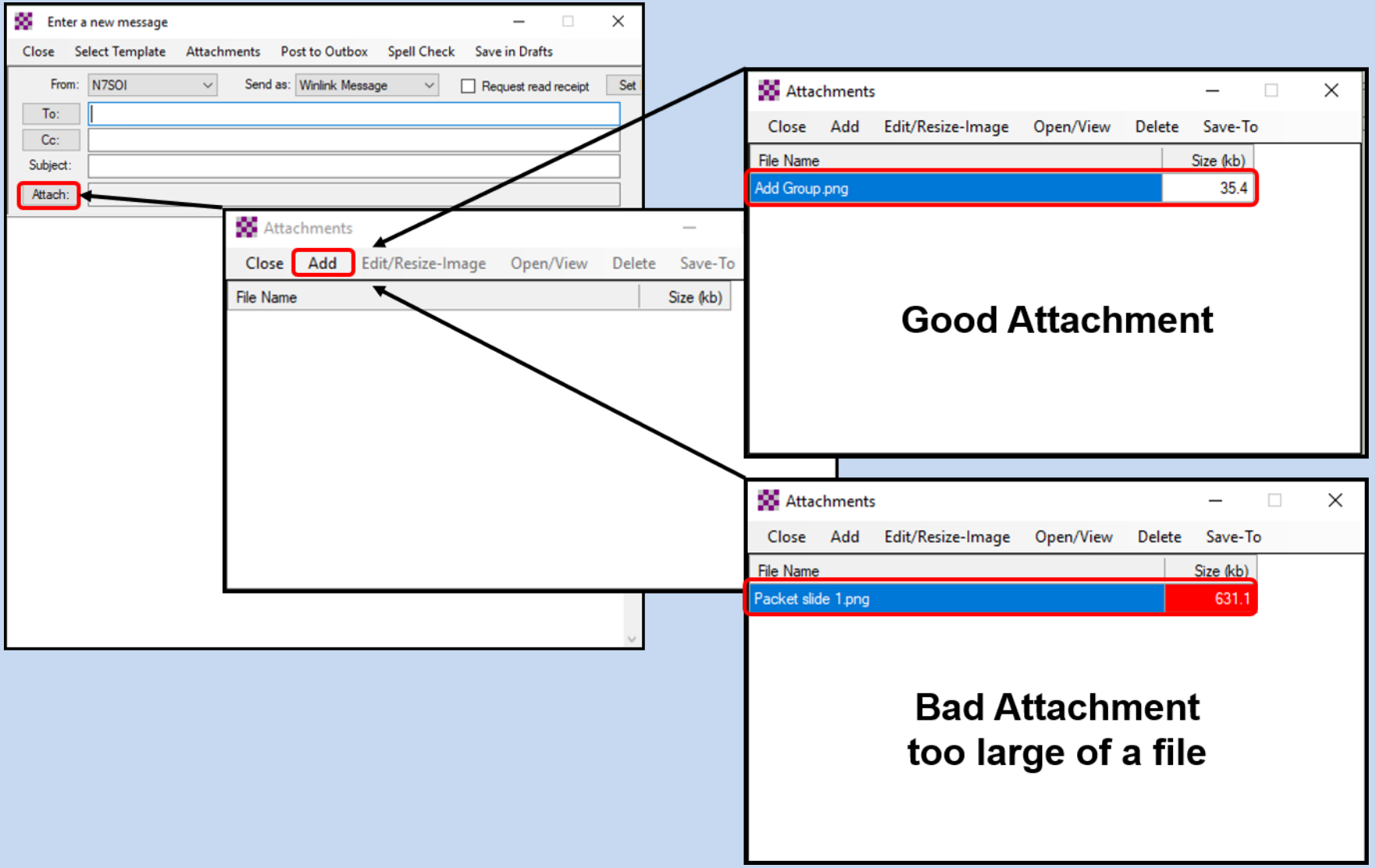
RMS Express Advanced

(Attachments to Messages)



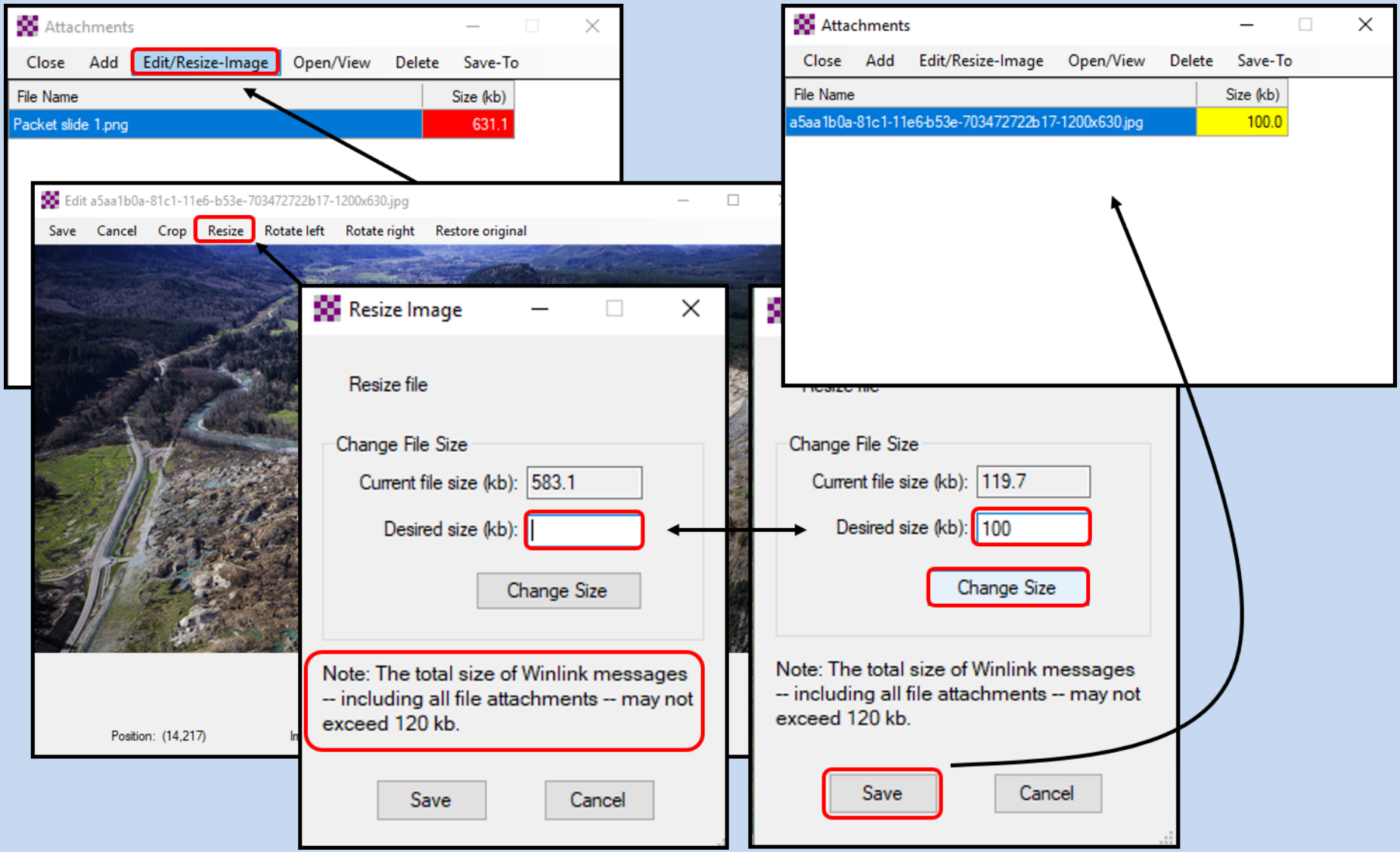
RMS Express Advanced

(Attachments to Messages)



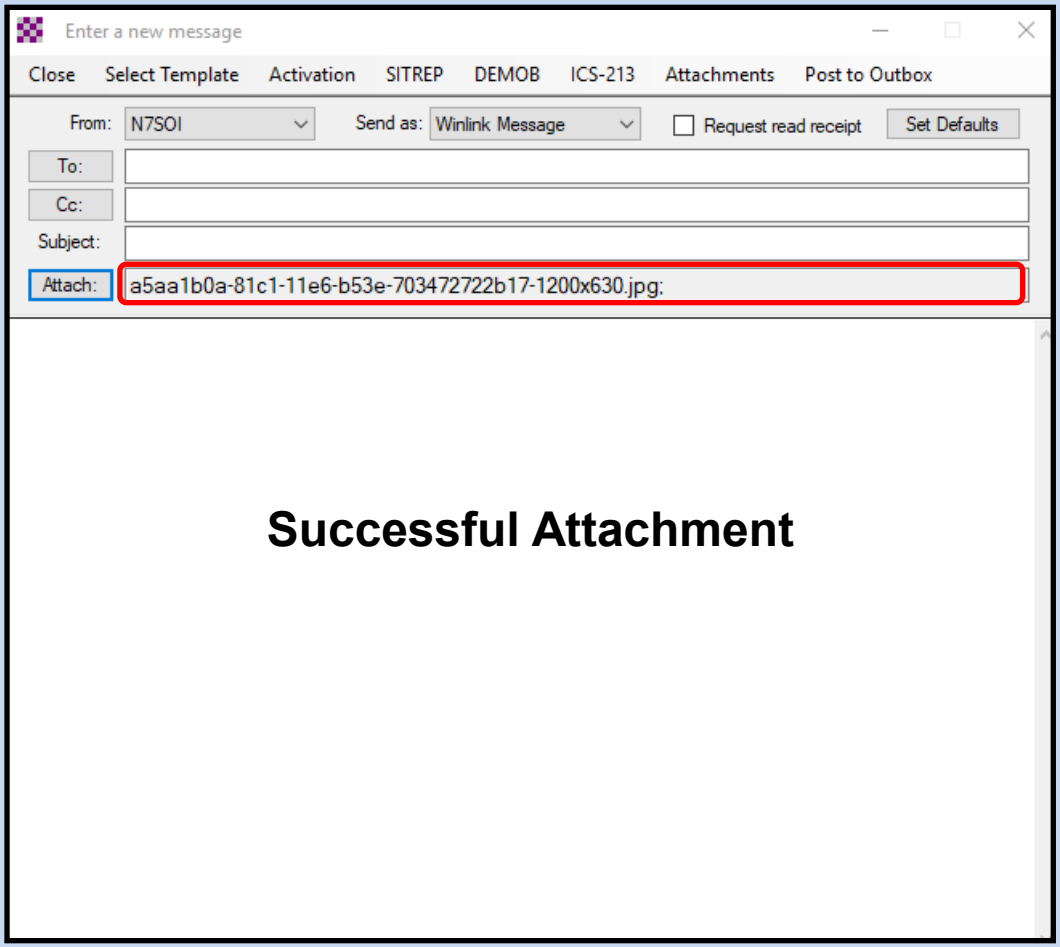
RMS Express Advanced

(Attachments to Messages)



RMS Express Advanced

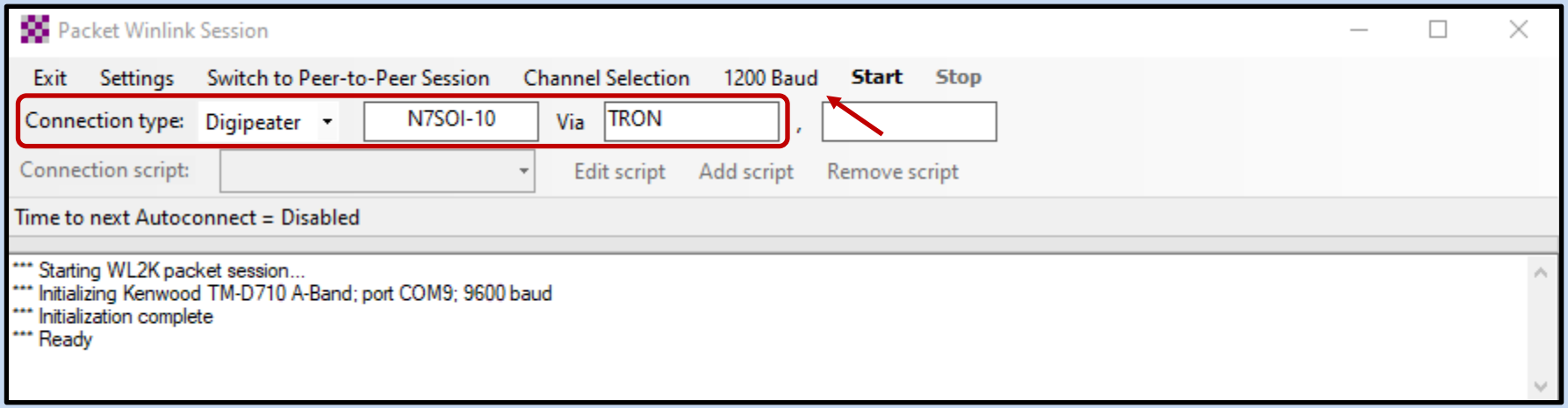
(Attachments to Messages)



RMS Express Advanced

(Relay through a Digipeater)

Digipeater Path



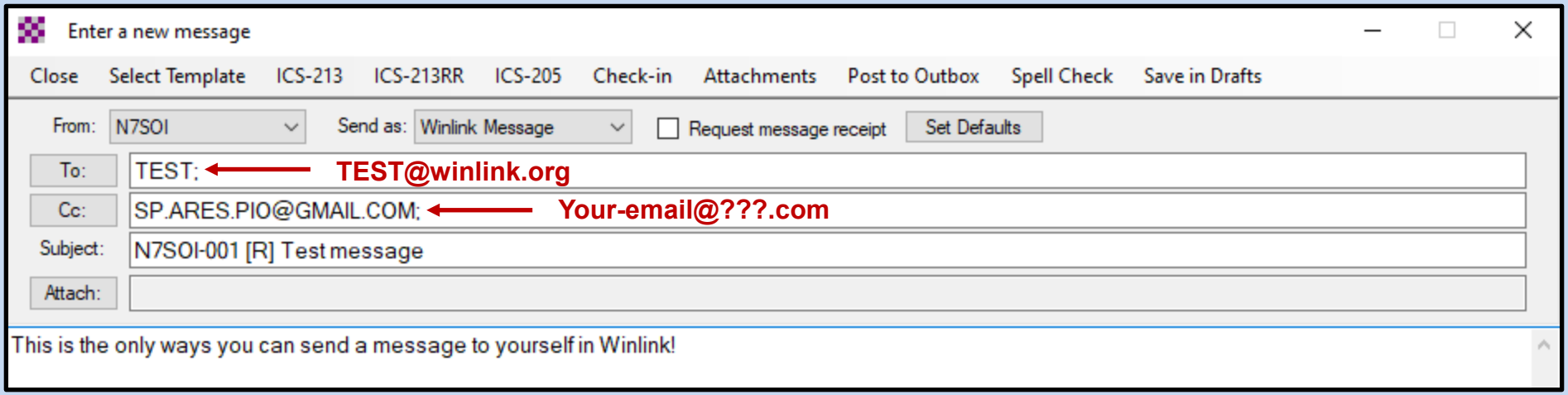
Notes:

- **When using a digipeater, all stations (originator, digipeater, receiver/gateway) must be on the same frequency and baud rate.**
- **Digipeaters give stations wide area coverage allowing them to conduct P2P sessions or connect to a distant gateway.**
- **Digipeaters double spectrum usage – connection times.**

RMS Express Advanced

(Sending yourself a message?)

Test Message Options



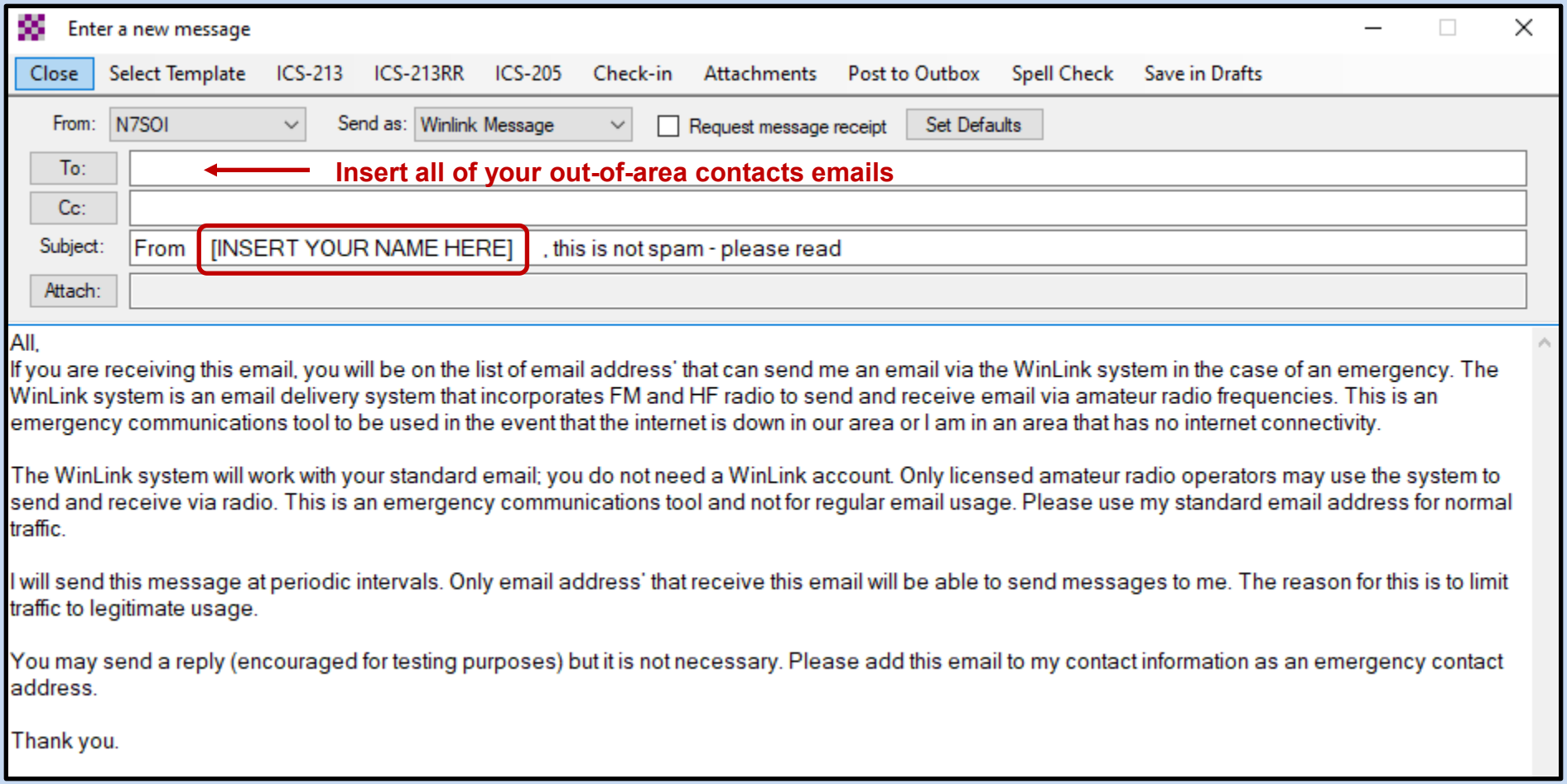
Notes:

- **WINLINK will not allow you to address a message to yourself – it will not be returned**
- **You must either use TEST@winlink.org or use your non-WINLINK email address**

RMS Express Advanced

(Out-of-area contacts – maintaining your White List)

Send an iterative email to your out-of-area emergency contacts



Note: Any email address (non-WINLINK) that you have not sent an email to will be rejected by the system!

Conclusion

The use of WINLINK in the ARES, AUXCOMM, EMCOMM environment continues to grow and is quickly becoming a standard across many Served Agencies. Many Served Agencies prefer the use of WINLINK due to its FEC/ARQ protocols, its addressability (specific recipient(s)), and it internet link.

While ARES focuses on the Radio link, Served Agencies may have access to Satellite based internet feeds and rely on TELNET for most of their WINLINK access.

Bandwidth usage and duration of transmission times are of great importance to the ARES Radio Operator and any WINLINK message should be vetted prior to transmission. If at all possible transmission of files should be limited and the use of Comma Separated Values (CSV) files to minimize file sizes and transmission times.

Each additional message addressee adds to the cumulative spectrum usage as each addressee must download the message and confirm receipt if requested.

The WINLINK system is continually improved; please support the development of WINLINK by purchasing the subscription.

QUESTIONS