

D-RATS Training

D-RATS Lesson schedule

1. Introduction (need for dedicated email address and a WINLINK address)
2. SFARES Toolkit
 - a. Situation (EOC, SAR, DOH, Skywarn, Public Service)
 - b. Systems (Internet, VHF/UHF repeaters, HF, Winlink 2000 System)
 - c. Software
3. D-RATS Installation and Configuration
4. CHAT
5. FILES
6. MESSAGES
7. MAP including Map Downloader
8. RF Segment with D-STAR radios
9. Trouble shooting
10. Resources

3. D-RATS installation and configuration (1 hour)

- D-RATS software free (<http://www.d-rats.com>) in Windows, Linux or MacOS
- D-RATS Operating Guide: [D-RATS Operating Guide 0.3.3.pdf](#)
- Operating Guide Update: [D-RATS Operating Guide Addendum 02232012.pdf](#)
- [Quick Set Up.pdf](#) for basic settings to get started using D-RATS
- Latest D-RATS release: **Daily Build 02232012** for Linux, MAC and Windows at:
- http://dev.d-rats.com/drats_daily/daily-02232012/
- Configurations:
 - D-RATS configuration Part I Rev 1.doc
 - D-RATS configuration Part II Rev 1.doc

Note: You don't need to be a ham to use D-RATS on the Internet. However, you do need to be a ham to use D-RATS if you use D-RATS and the Radio Frequency Segment (connect D-RATS to a radio).

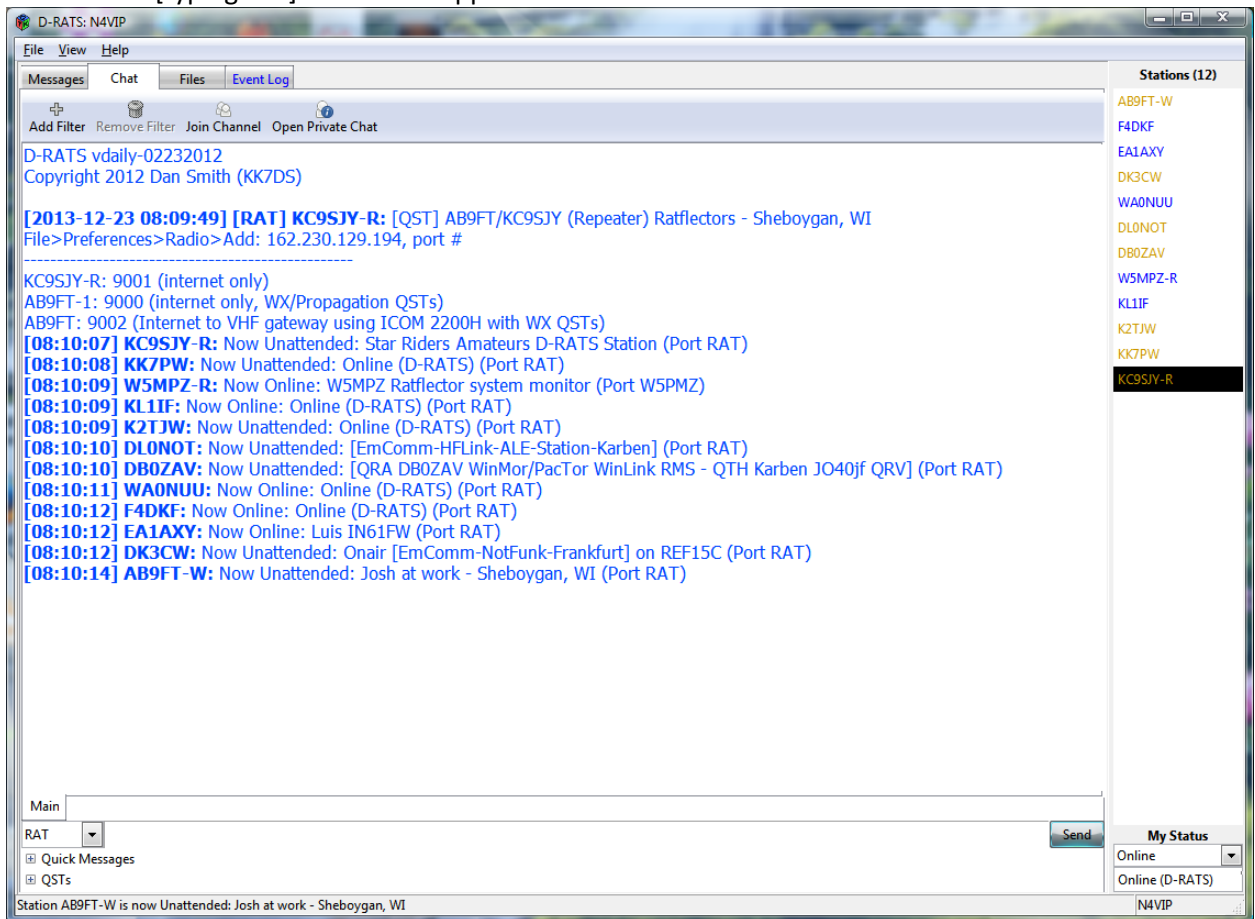
4. CHAT Window [Tab]

Main Area

Where real time text is exchanged with all stations

Received and transmitted text displayed in different colors and includes the port name and time stamp. (Colors can be adjusted in Preferences > Appearance)

Text can be selected, copied and pasted into other applications. Likewise, text can be pasted into the [typing box] from other applications.



Stations Pane (Area right side of the window)

Displays call signs heard and the time since last heard in parentheses

Hover mouse over a call sign to display their status and status message

Blue means Online, Orange means Unattended

Right click mouse on a call sign to display a context sensitive menu of additional operations.

Ping: Check the status of a station

Test Connectivity: Test quality of path to an RF station (important for RF Segment)

Request Position: Get the location of a station to be displayed on the map.

Get version: Request version of D-RATS

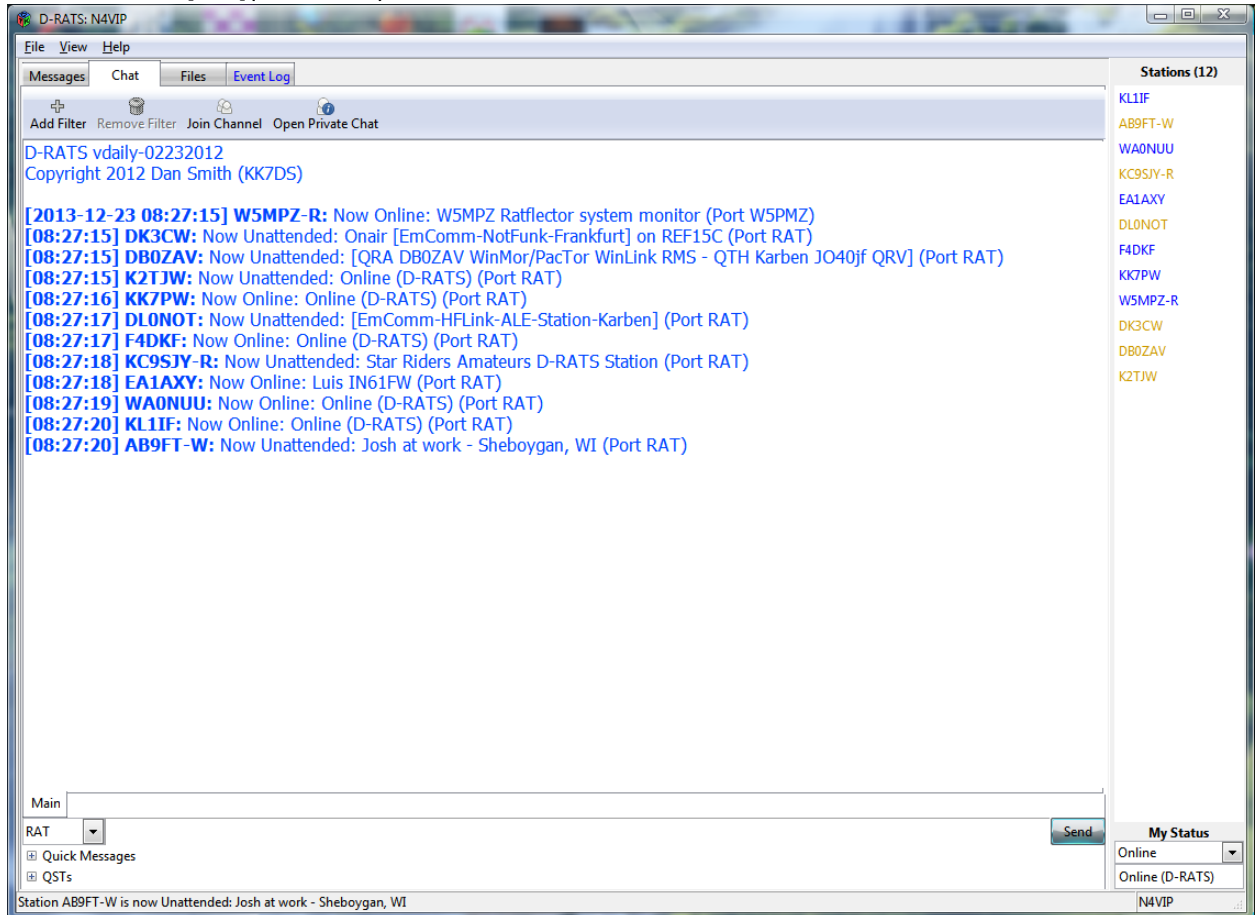
Request mail check: Check if a station is holding mail for you

Status Pane

What other users see when they hover their mouse over your call sign

Use the drop-down arrow to set your status as "Online" or "Unattended"

Type short message to be displayed with your status on the second line
This is the text that appears in parentheses (as above)
CHAT Window [Tab](continued)



Port Selection

Use the drop down arrow to select the port where text and QSTs are sent
All enabled ports are monitored and can receive messages and file transfers, but text and QSTs only go out the selected port

Quick Messages

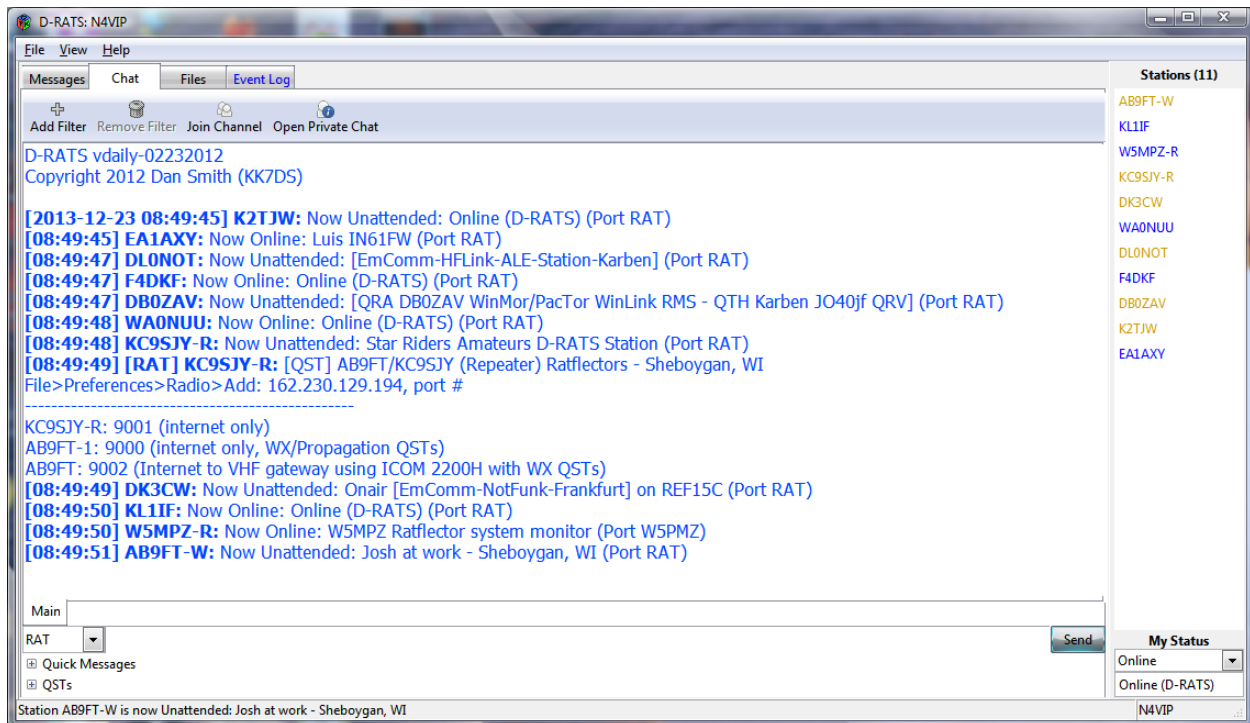
Allows storage of commonly used phrases when communicating via text
Point and double-click on a message to send it
Use buttons at right to add or remove Quick Messages

QSTs

Various types of bulletins can be sent periodically,
May contain: a string of text, the contents of a text file, your current position, the position of a station or static location in the map window, the current temperature at an airport, or an RSS or CAP feed
Use the add button to create a new QST

CHAT Window

[Tab](continued)



Filters (3 types)

Incoming chat text from all active ports goes to Main area in the chat window.

For large amounts of activity, it may be desirable to sort incoming Chat text using Filters

Filter strings used to parse incoming text and divert it into other areas in the chat window

Filters (when established) appear as Tabs at the bottom of the Chat window

Filter tabs may be dragged and dropped to change their order

Add Filter

Click “Add Filter” and enter a string of text. Any incoming Chat messages containing text matching the filter sent to the filter tab and not the main area. In the above example, any Chat message containing [QST] is sent to the filter Tab.

Channels

A variation on the filter concept allows you to create “channels” within the Chat window.

Multiple stations with a similar task may be grouped together or communications with a specific location can be separated from the Main traffic area. Example: Any station may communicate directly with the EOC or the Hospital during a Search & Rescue operation.

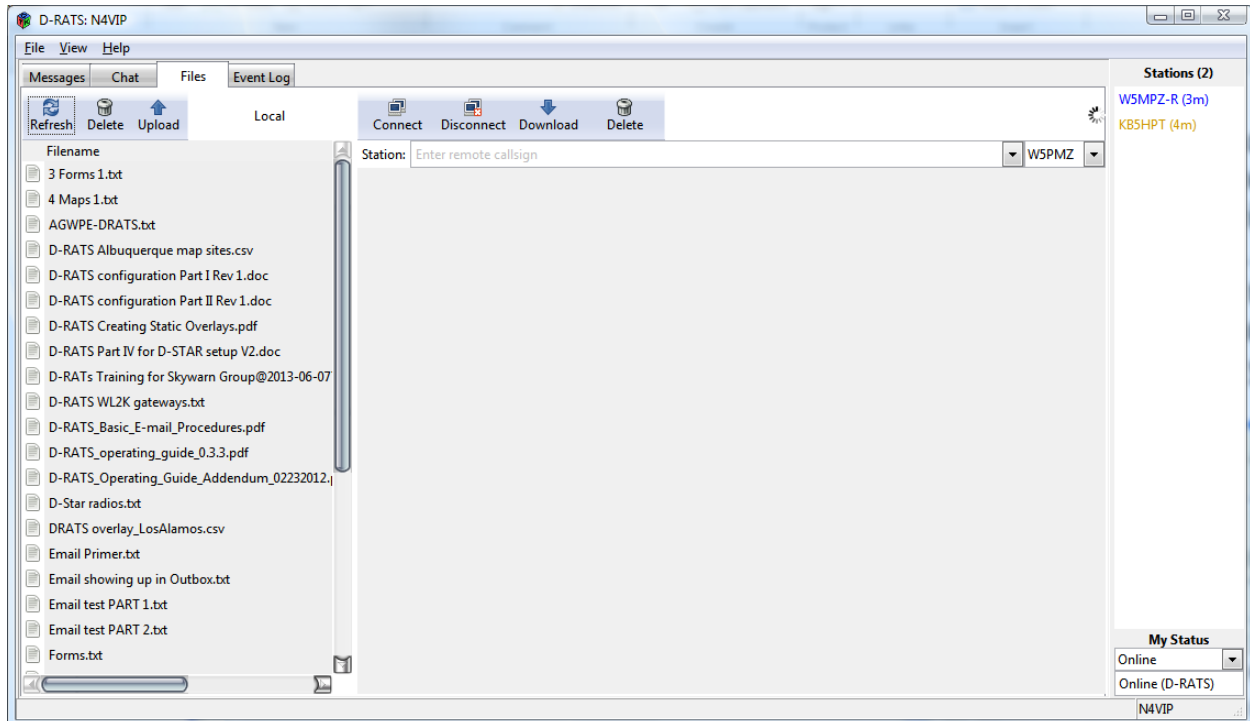
Private Chat

The third version allows you create a “private” channel with another station

5. FILES Window [Tab]

Transfer files from one station to another using D-STAR radio or the Internet

- Left side of the screen shows files in your local sharing folder (defined in Preferences>Path)
- Right side of the screen displays files in the remote stations sharing folder

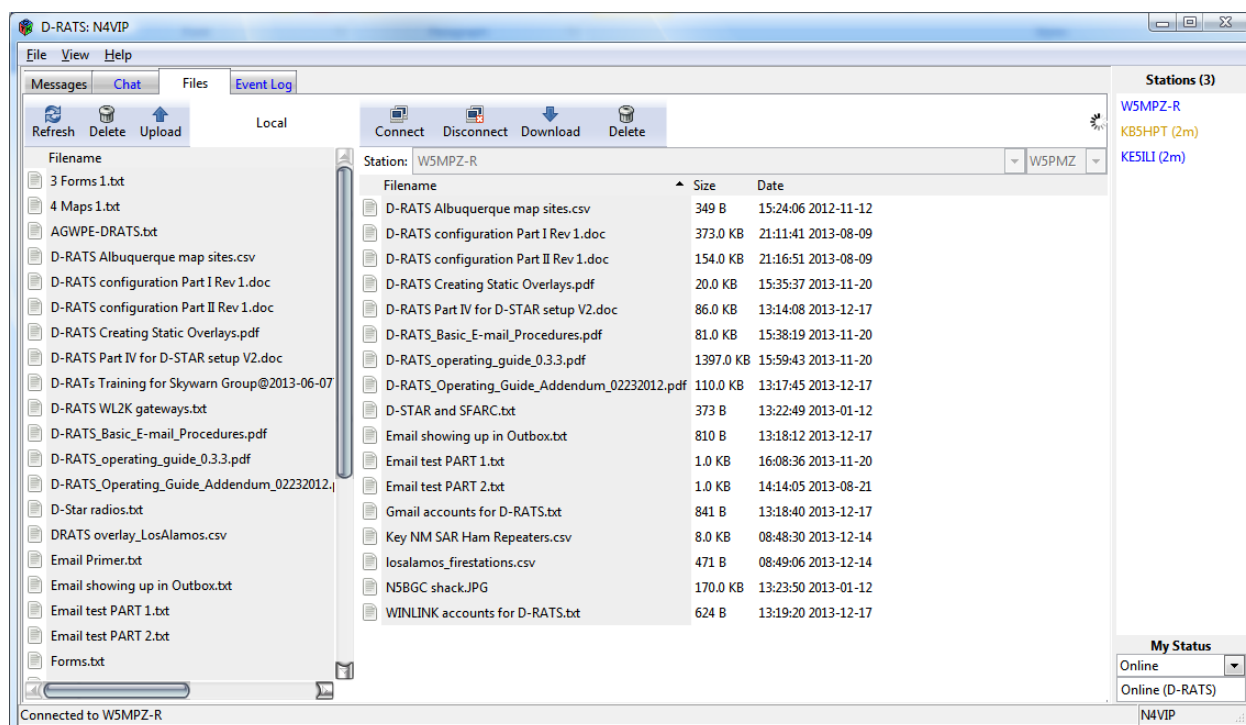


FILES Window [Tab](continued)

To transfer from an online station:

- Use the drop down arrows right side of screen to select a station and the port
- Click on connect button
- Remote stations file list will soon appear on the right side of the screen

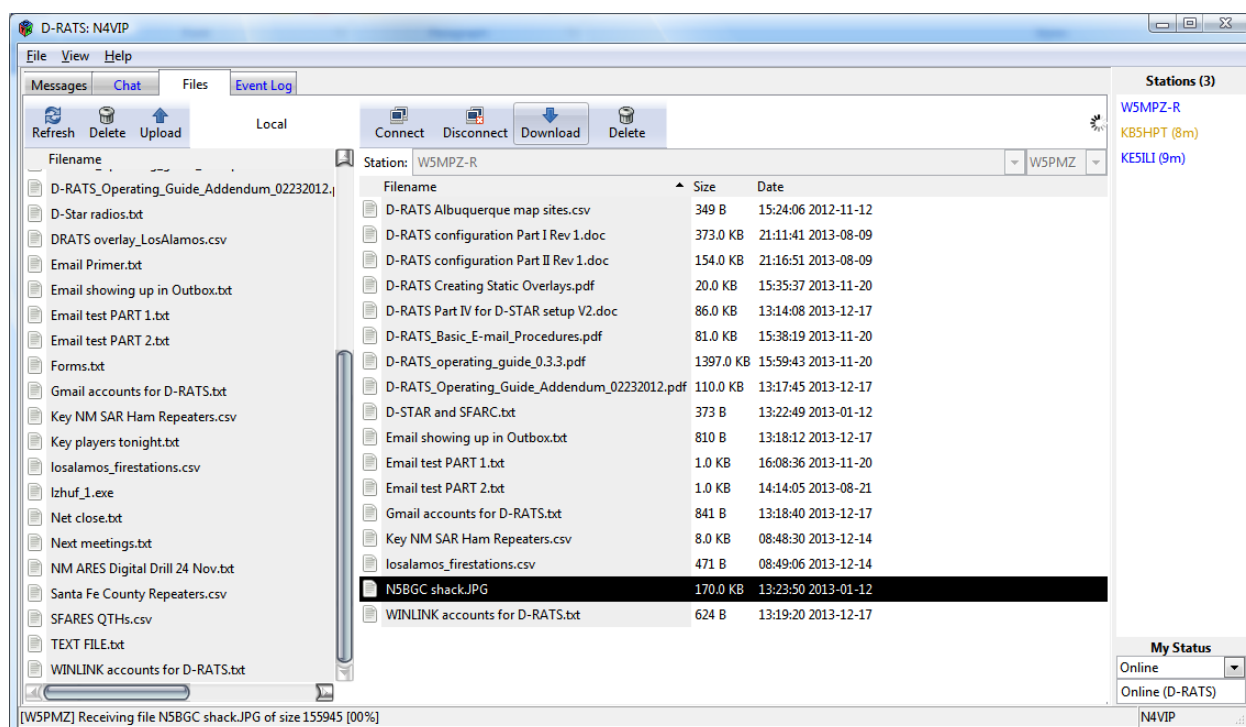
[Screen shows that I selected Port W5MPZ, Station W5MPZ-R, connect and files available on W5MPZ-R]



FILES Window [Tab](continued)

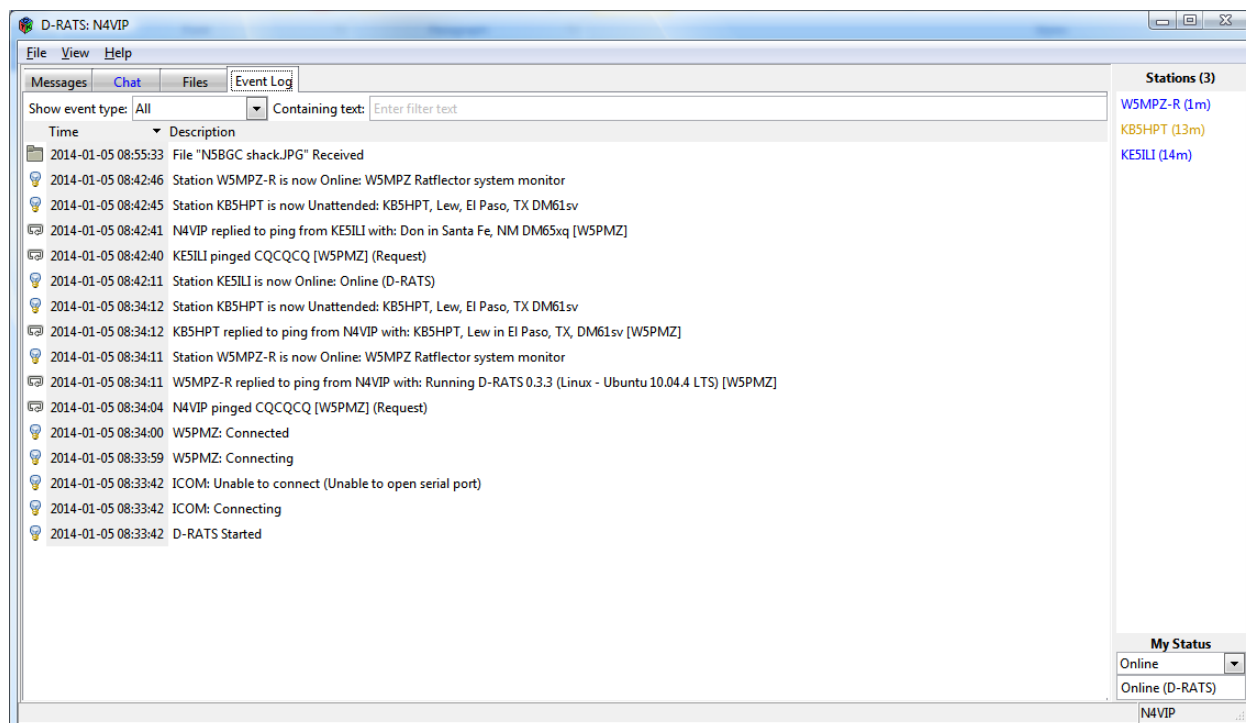
- To retrieve a file, highlight it and click download
- To send a file to the remote station, highlight a file in your local list and click upload
- Lower left windows shows the two D-RATS programs (yours and the remote) handshaking
- Be sure to click on the disconnect button when you are finished exchanging files with a station

Note: Lower left window shows everything put into the Event Log Tab



FILES Window [Tab](continued)

Event Log Tab is a list of all transactions that have taken place on the port or ports you are connected to. This is useful for troubleshooting and gaining knowledge about how D-RATS works behind the scenes. You can't edit or copy this screen.



6. MESSAGES Window [Tab]

Prior to using the MESSAGES tab, you must configure your Outgoing Email and Email Accounts. After doing so, you should confirm that POP is enabled in your Gmail Account. To do so, log into your Gmail account, go to Settings>Forwarding and POP/IMAP and check that POP is enabled.

Where all pre-formatted messages are sent and received

Looks like and functions as e-mail client software

User can exchange pre-formatted messages with:

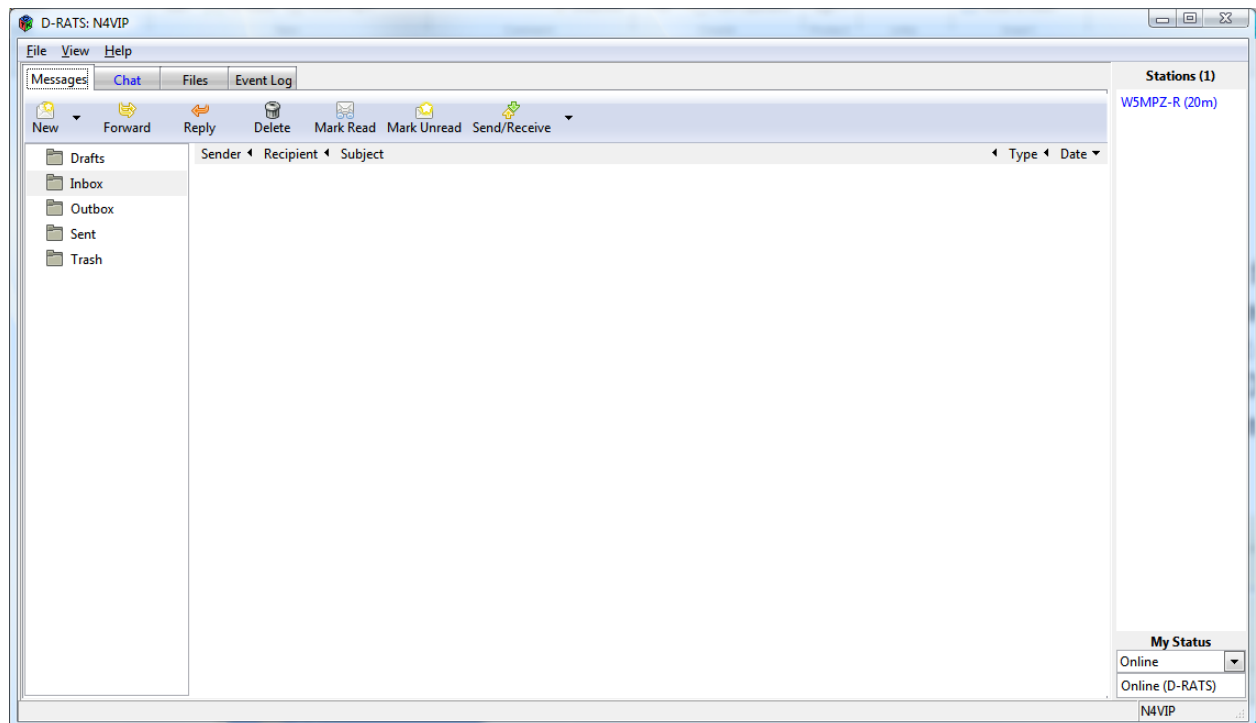
- Other D-RATS users;
- Internet e-mail servers; and
- WinLink 2000 System (WL2K) RMS stations or CMS servers.

To send and receive internet e-mail, you must enter incoming and outgoing **server information** in Preferences window

D-RATS only sends and receives plain text, and does not support HTML based e-mail

For this reason you should set up an e-mail account just for use with D-RATS, e.g.

donhinsman@gmail.com

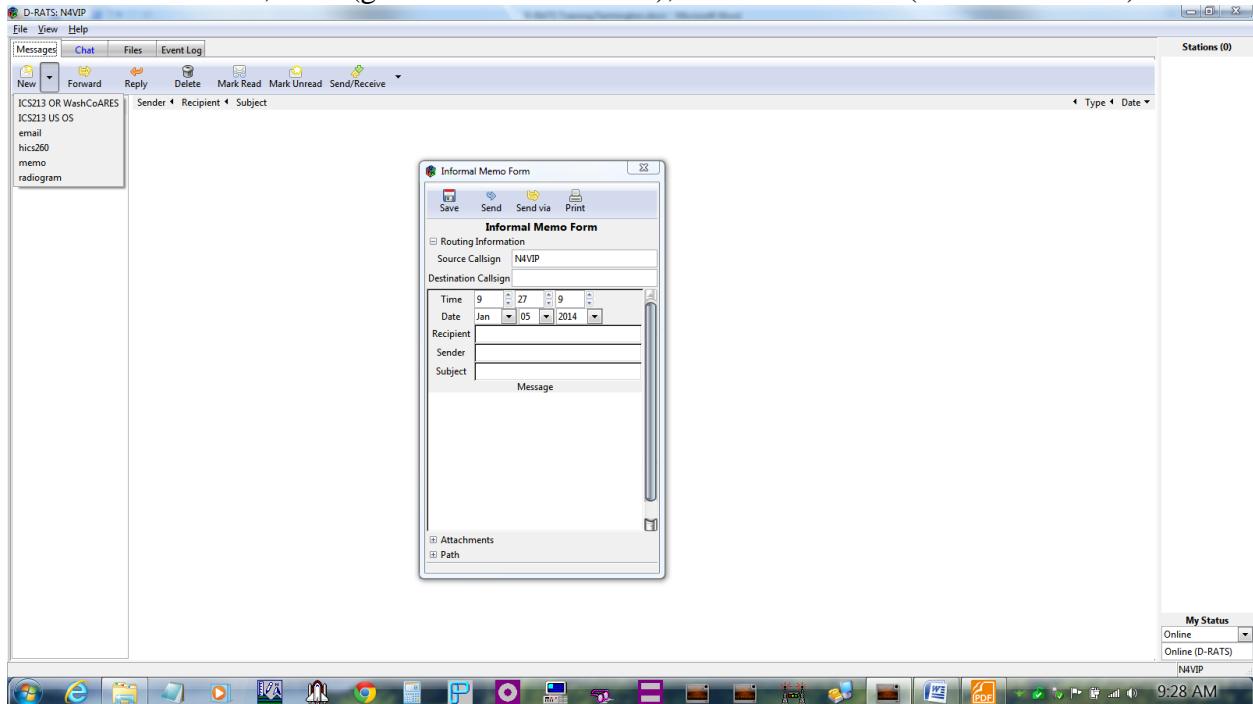


MESSAGES Window [Tab](continued)

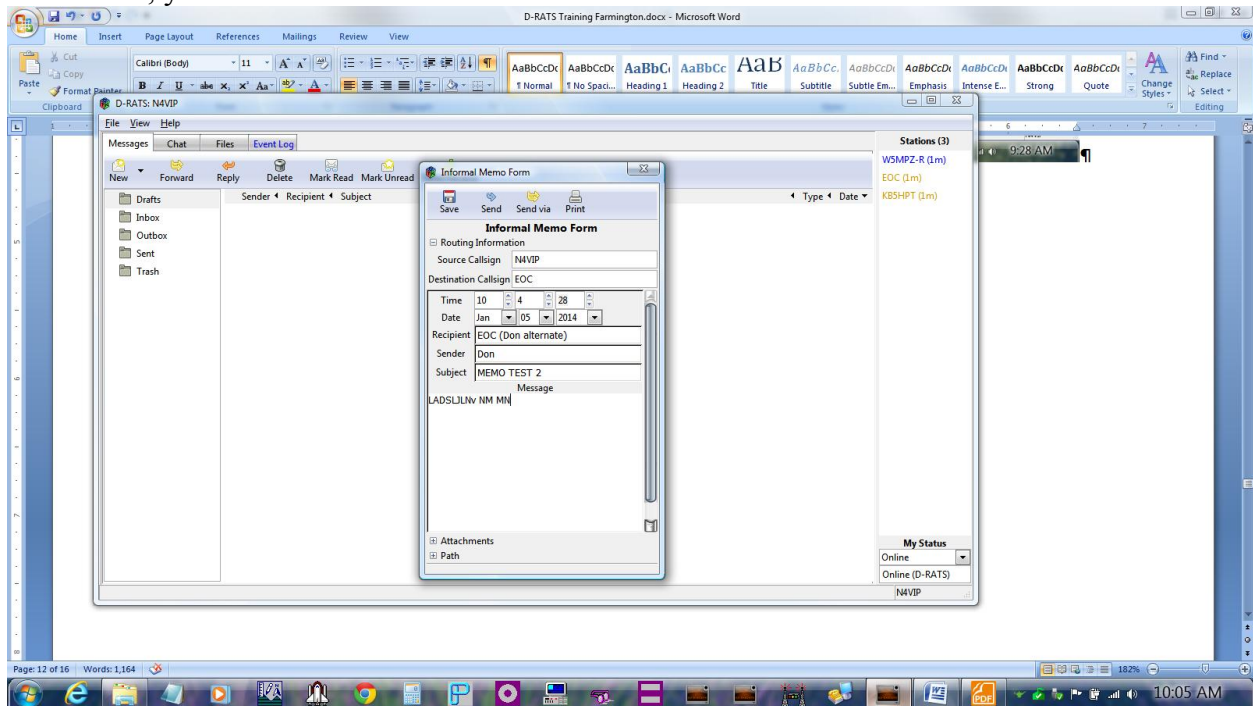
- Other D-RATS users using New>memo (Informal Memo form)
 - Sends a memo to another online Station

Fill in Form with final destination Call sign

Note: One can Send, Save (goes into the Draft box), Send via or Print (shows on screen)

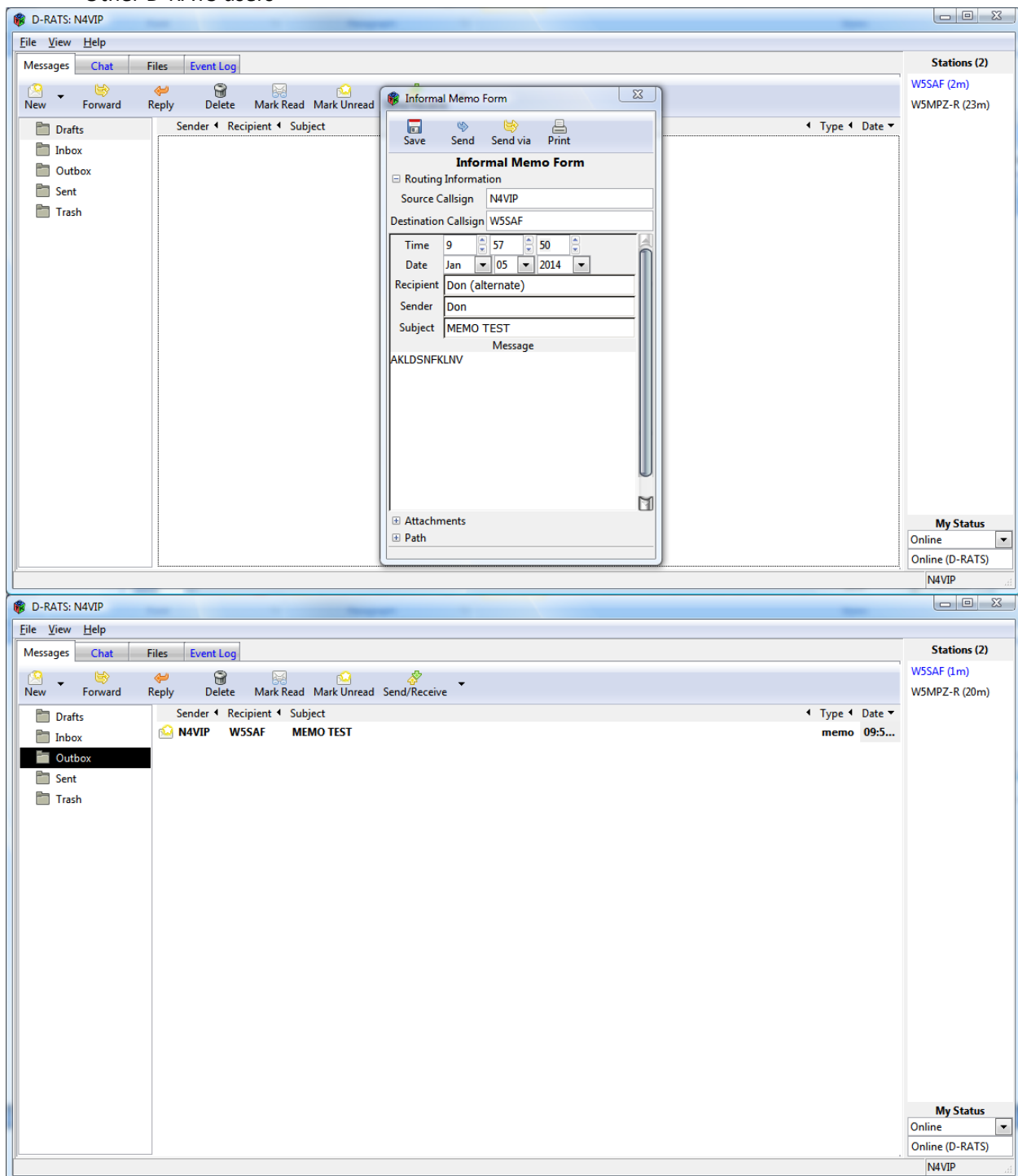


Remember, you don't need to be a ham to use D-RATS to send a memo



MESSAGES Window [Tab](continued)

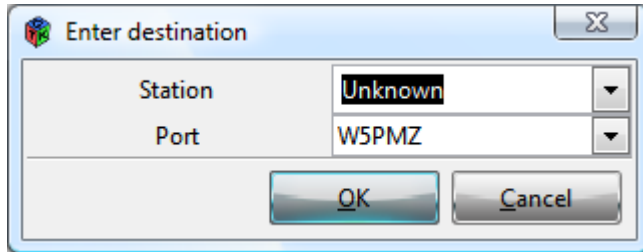
- Other D-RATS users



Used "Send" so memo will stay in the Outbox until W5SAF comes online on W5MPZ

SEND via

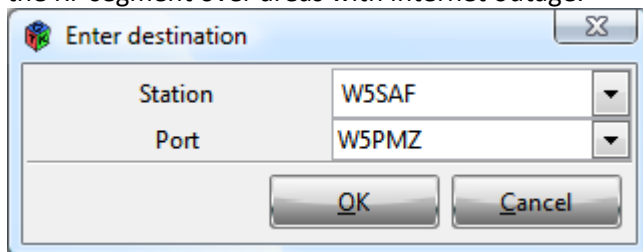
Note: Send via calls up the Enter destination window



The screenshot shows a dialog box titled "Enter destination". It has two dropdown menus: "Station" and "Port". The "Station" dropdown is currently set to "Unknown" and the "Port" dropdown is set to "W5PMZ". At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

In the following Window, I have selected W5SAF (online in the Station Panel).

The email sent by "Send via" will first go to the Destination station (e.g. W5SAF) by the designated port. The designated port must have already identified the sender station in Preferences>Email access to enable reception of the email. Since the "messages" is an email, the destination station will see the "message" in his/her Outbox and can then send via his/her internet server. If the Port wasn't to a RATflector (via the internet) but rather a radio (a connected D-STAR), then Send via allows a bridge by the RF segment over areas with internet outage.

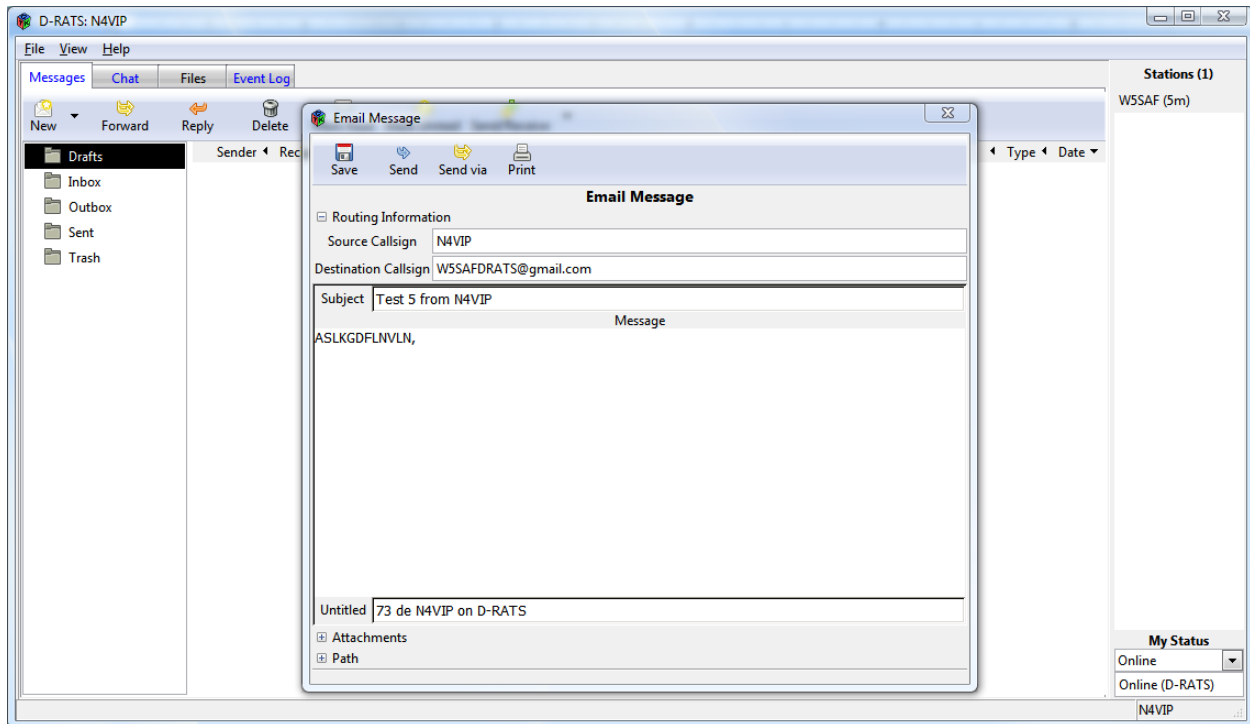


The screenshot shows the same "Enter destination" dialog box, but the "Station" dropdown has been changed to "W5SAF". The "Port" dropdown remains set to "W5PMZ". The "OK" and "Cancel" buttons are still at the bottom.

MESSAGES Window [Tab](continued)

- Internet e-mail address using New>email (Email Message)
 - Sends an email to the SMTP server defined in your Preferences>Network>Outgoing Email (e.g. SMTP.GMAIL.COM)
 - Note: you can only have one Outgoing Email server defined but many Preferences>Network>Email Accounts (e.g. POP3.GMAIL.COM)

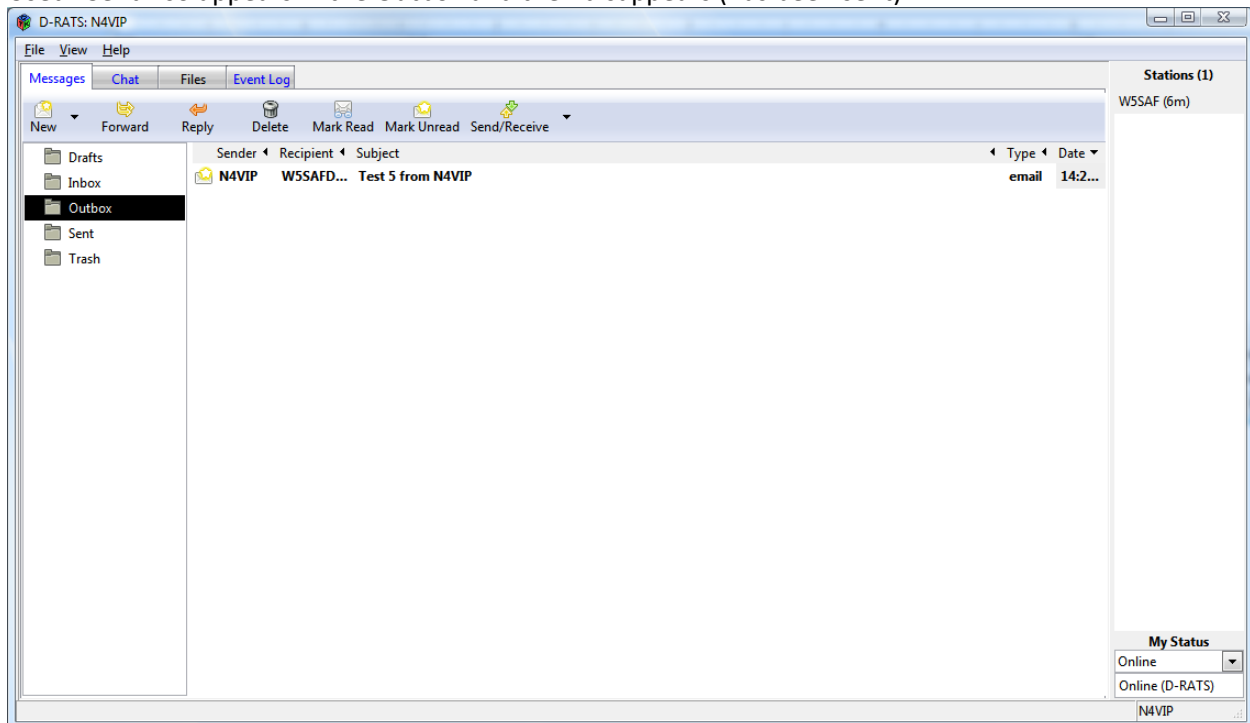
Fill in Form with final destination email address



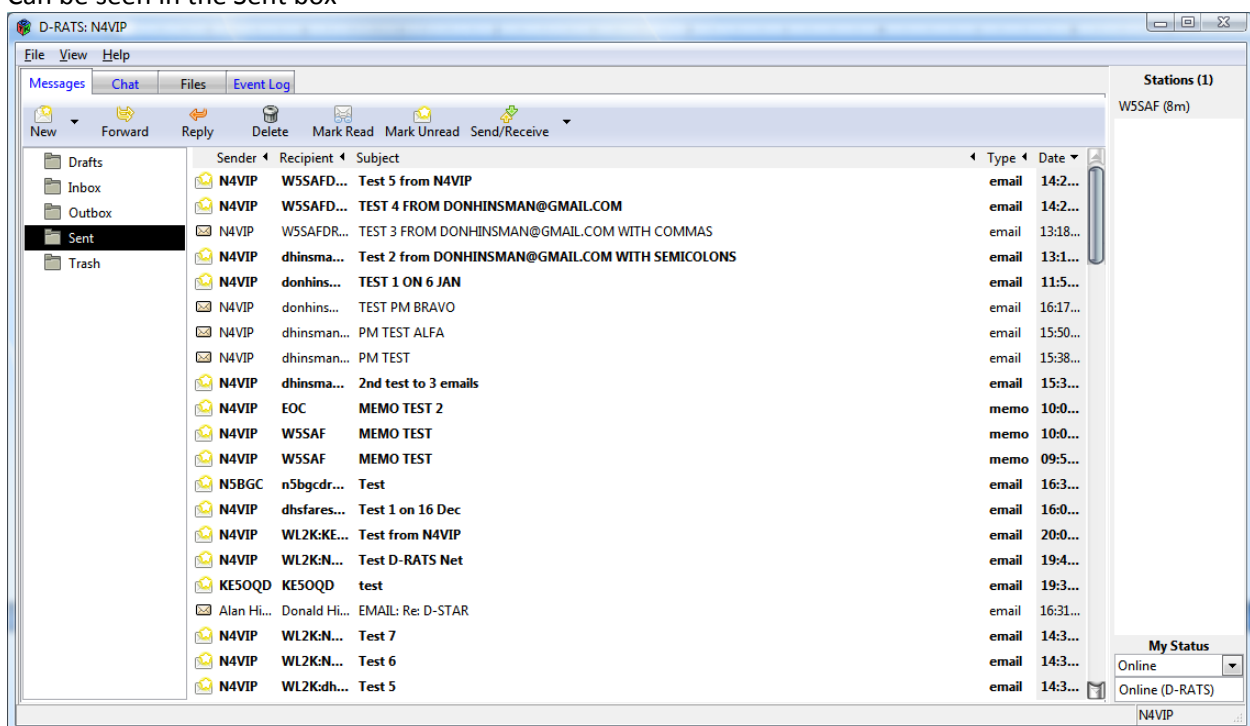
MESSAGES Window [Tab](continued)

- Internet e-mail address

Used “Send” so appears in the Outbox and then disappears (has been sent)

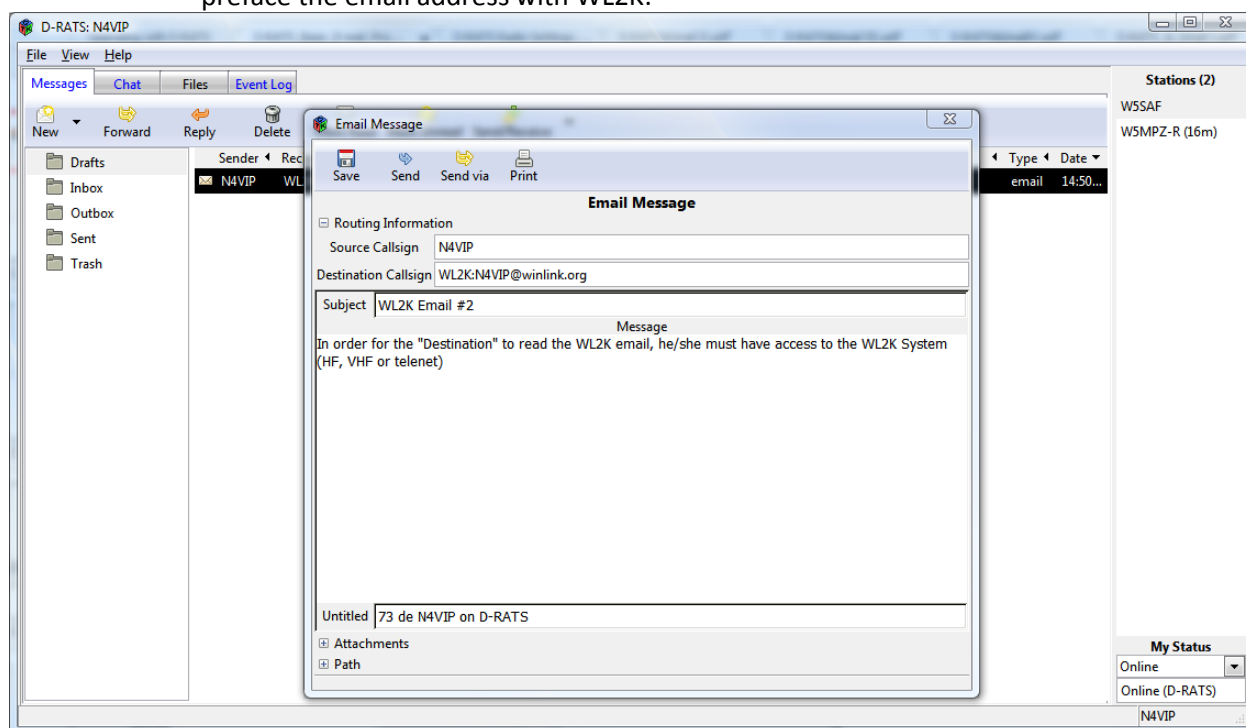


Can be seen in the Sent box



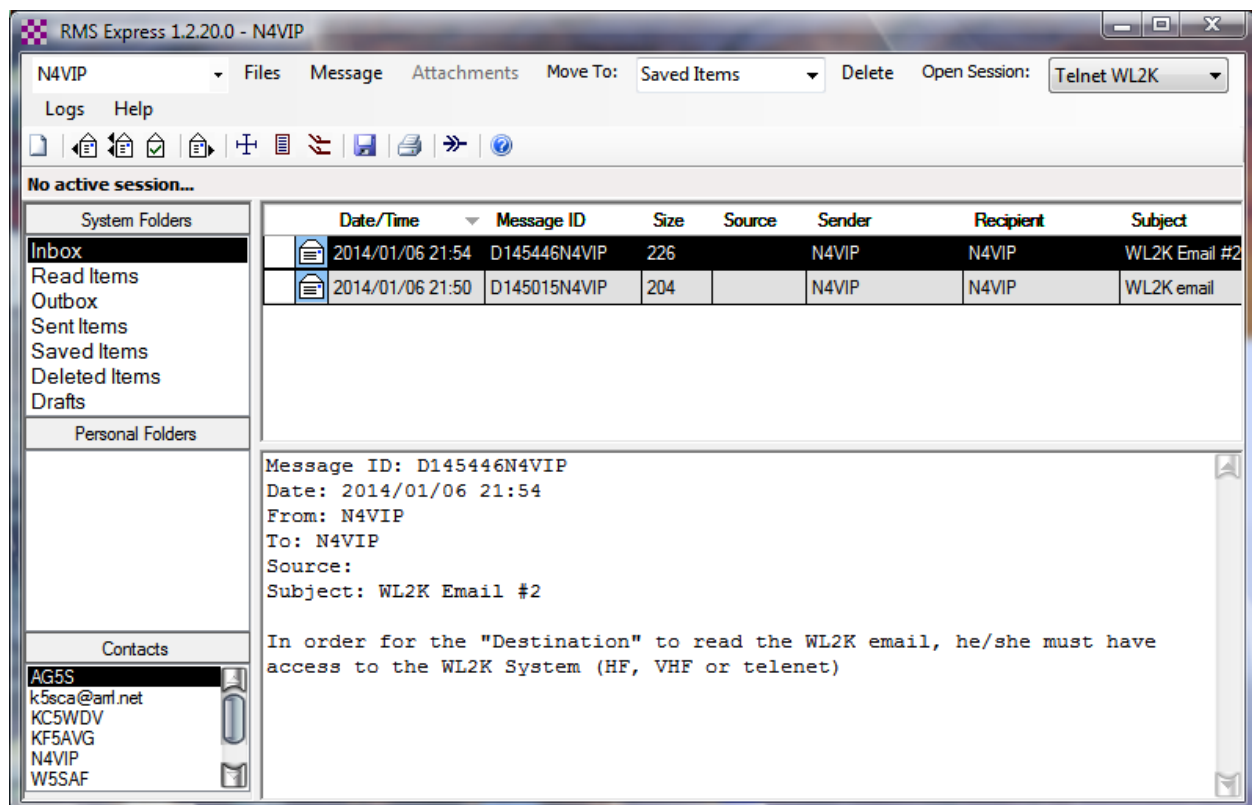
MESSAGES Window [Tab](continued)

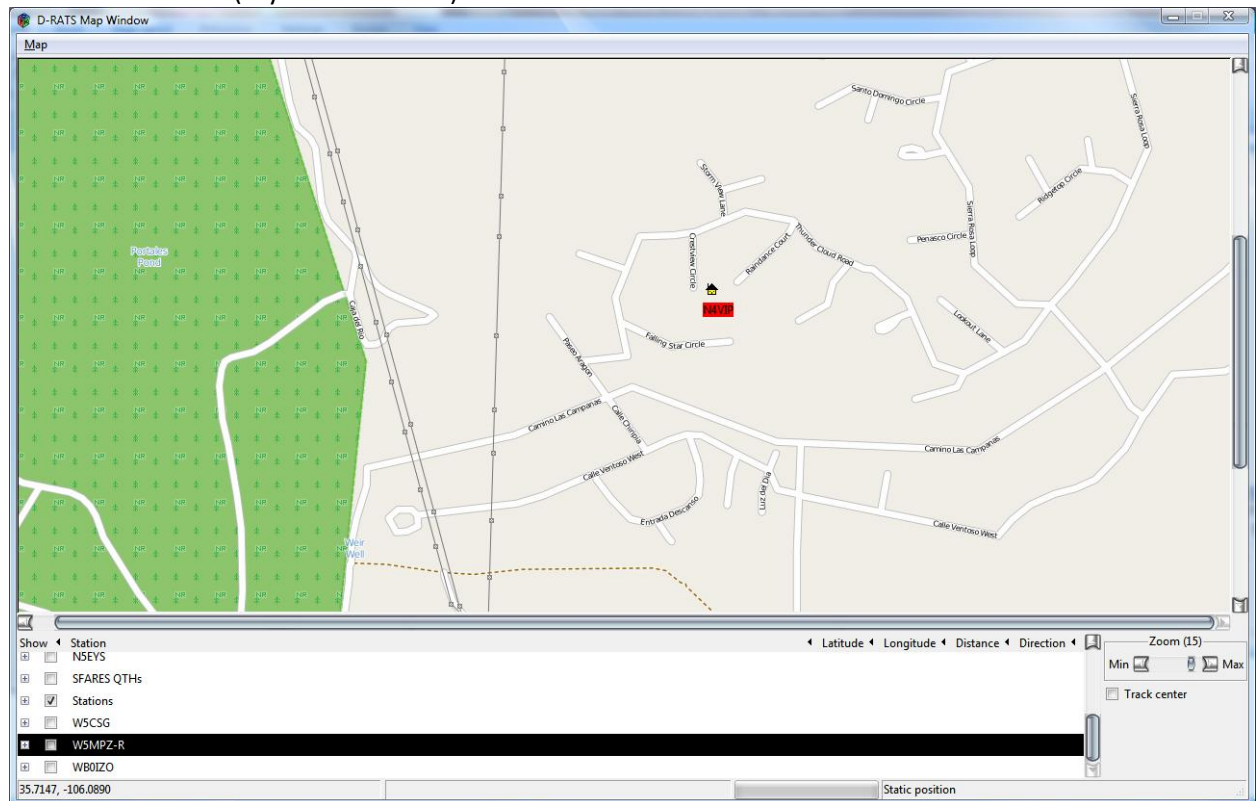
- WinLink 2000 System (WL2K) RMS stations or CMS servers using New>email (Email Message)
 - Sends an email to the WL2K server defined in your Preferences>Messages
 - Note: You must have a registered WL2K email address, e.g. N4VIP@winlink.org
 - Note: So you must be a ham
 - In order for D-RATS to know this is a WL2K email and not a normal email, you must preface the email address with WL2K:



Winlink 2000 (WL2K) is a worldwide system of volunteer sysops, radio stations and network assets supporting e-mail by radio, with non-commercial links to internet e-mail. The system provides valuable service to **emergency communicators** and to licensed radio operators without access to the internet. You must hold an Amateur Radio license or be a member of a supported organization or agency to use the Winlink 2000 system. Usage and software is free for all who qualify.

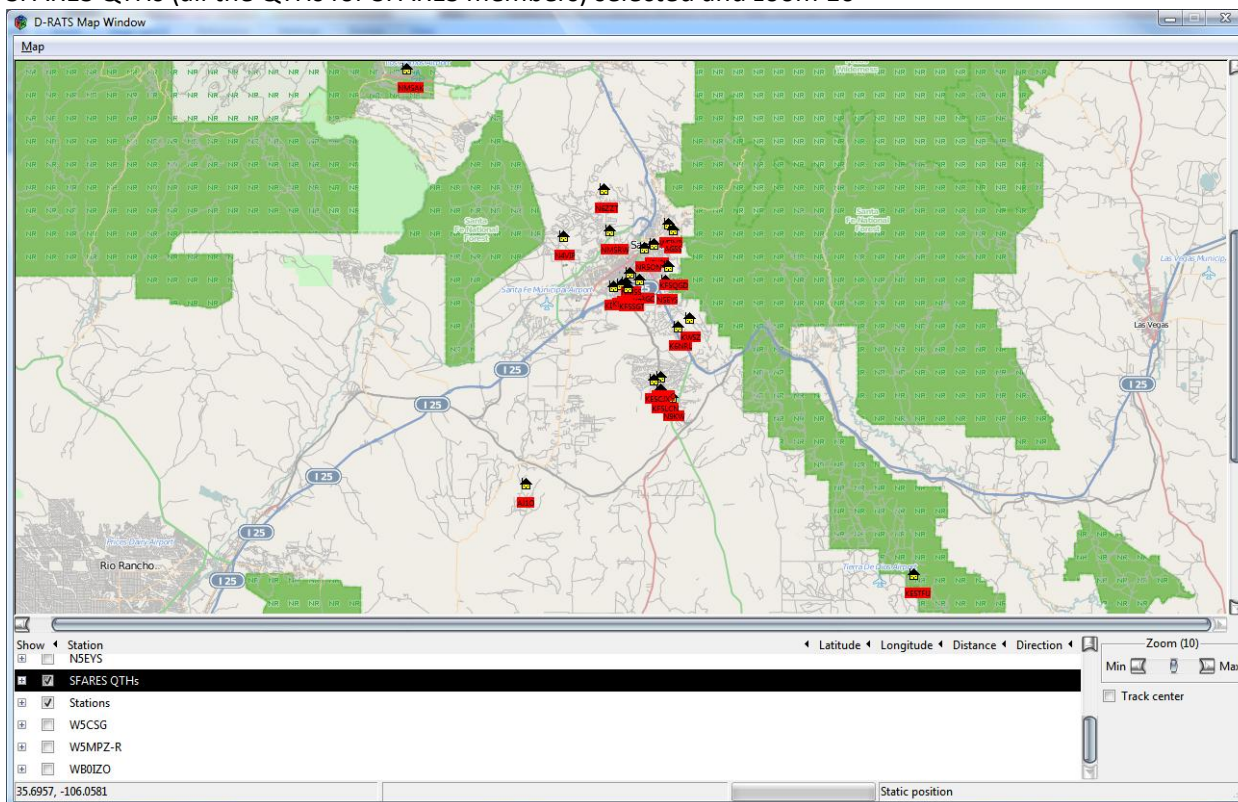
This is the RMS Express Window for N4VIP using Telnet WL2K.



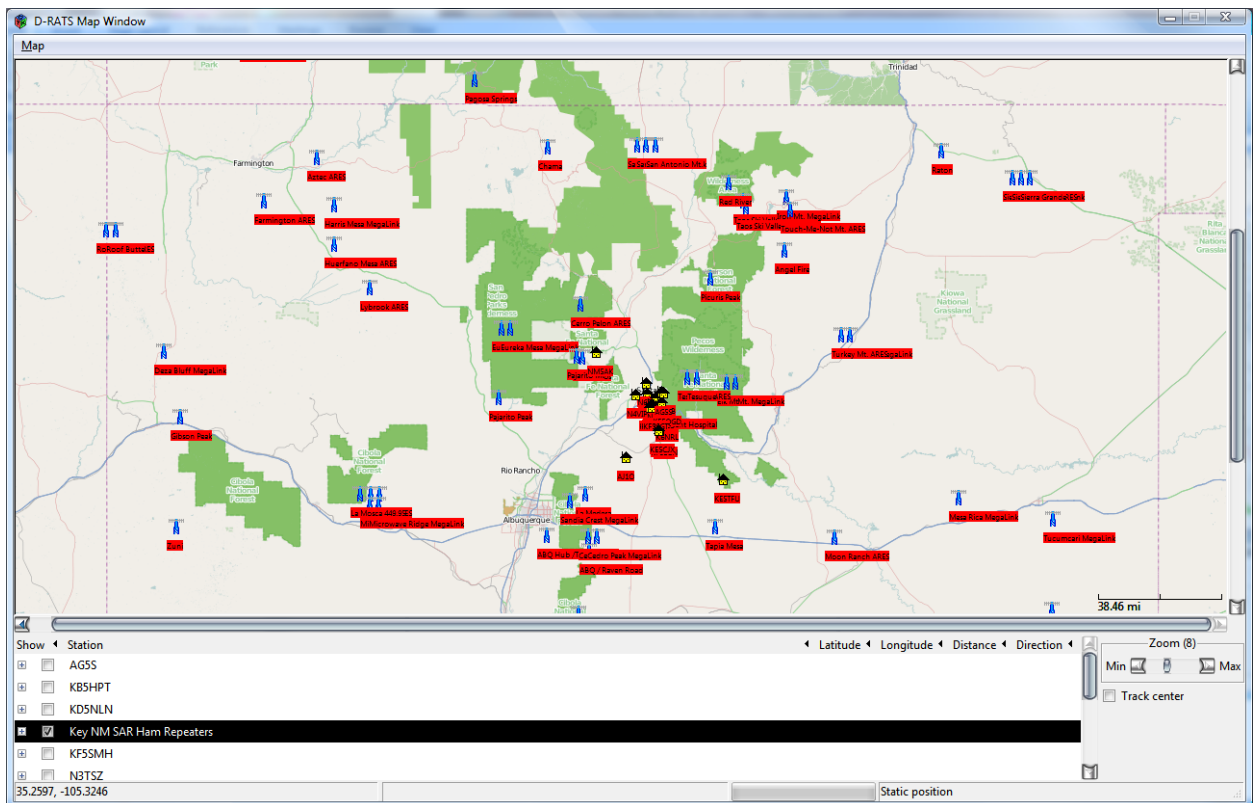


Map (continued)

SFARES QTHs (all the QTHs for SFARES members) selected and zoom 10



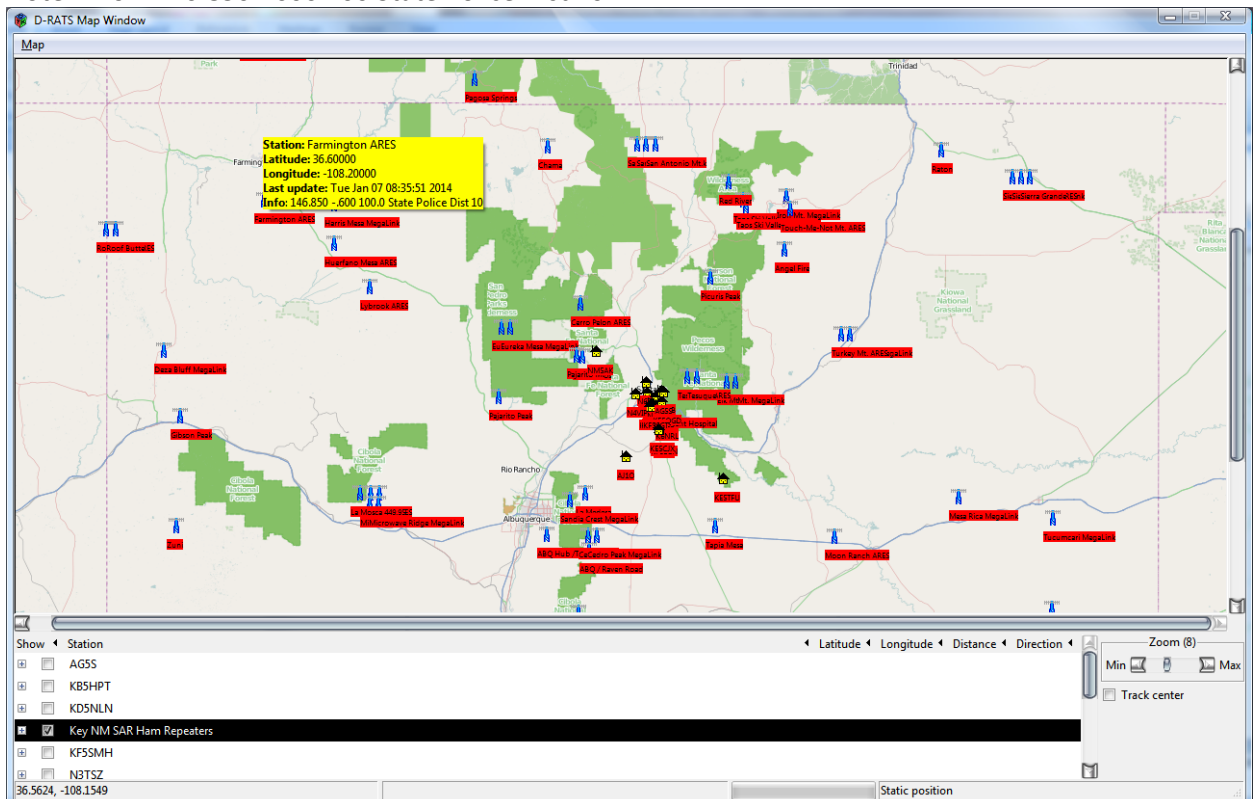
Key NM SAR Ham Repeaters selected and zoom 8



Map (continued)

Key NM SAR ham repeaters selected, zoom 8 and mouse hovering over Farmington ARES repeater

Note: Info – 146.850 -.600 100 State Police Dist 10



Summary

- Map provides positional awareness and information. Can see where all online stations are and can see where resources are.

See “D-RATS Creating Static Overlays.pdf” for instructions

View of Key NM SAR Ham Repeaters.csv

Key NM SAR Ham Repeaters.csv - Microsoft Excel

HomeInsertPage LayoutFormulasDataReviewView

Cut

Copy

Format Painter

Clipboard

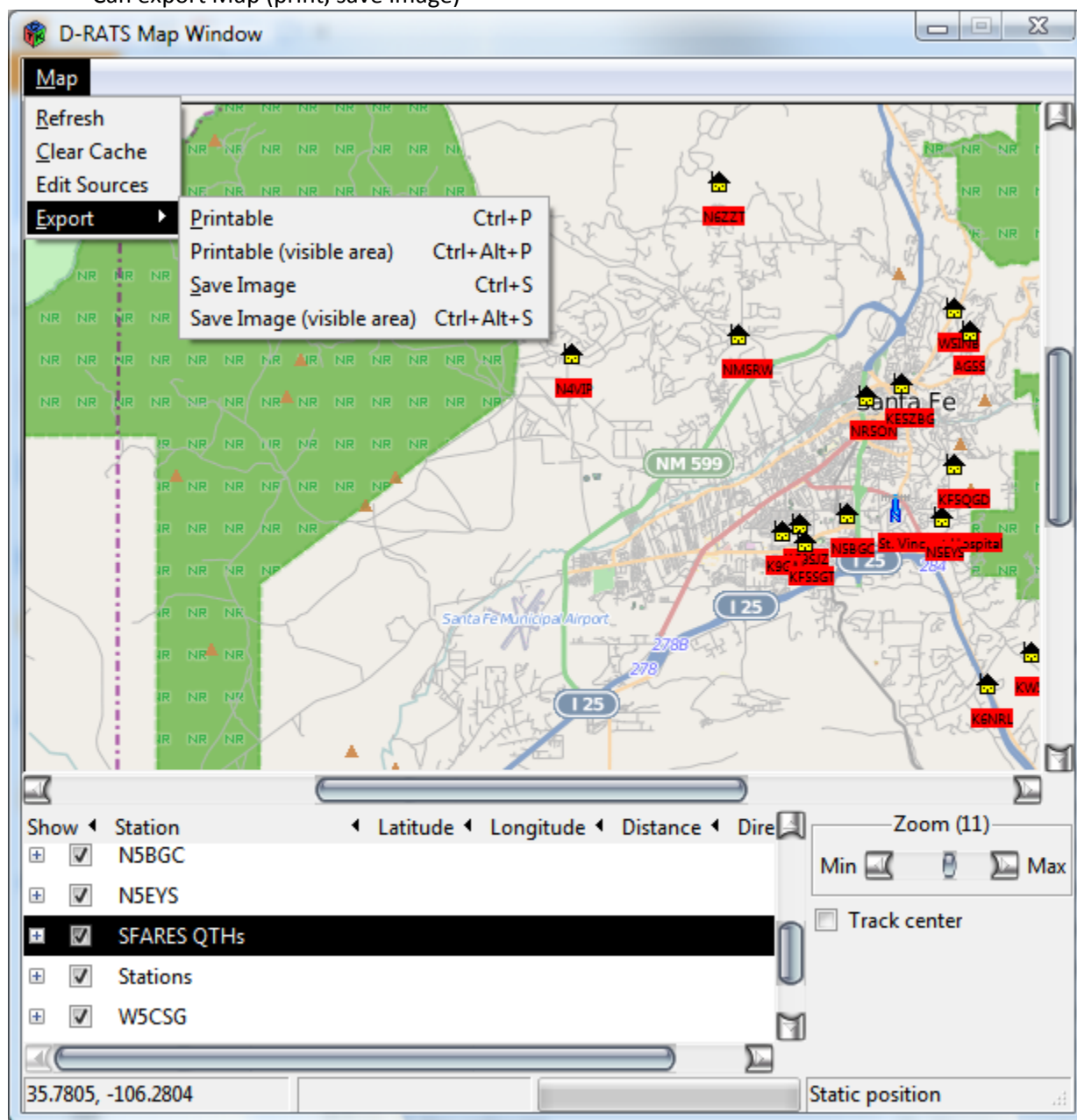
Calibri

11

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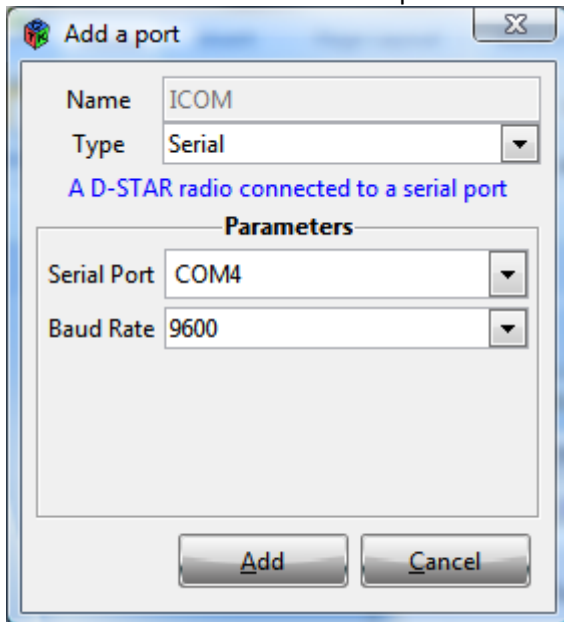
Map (continued)

- Can export Map (print, save image)

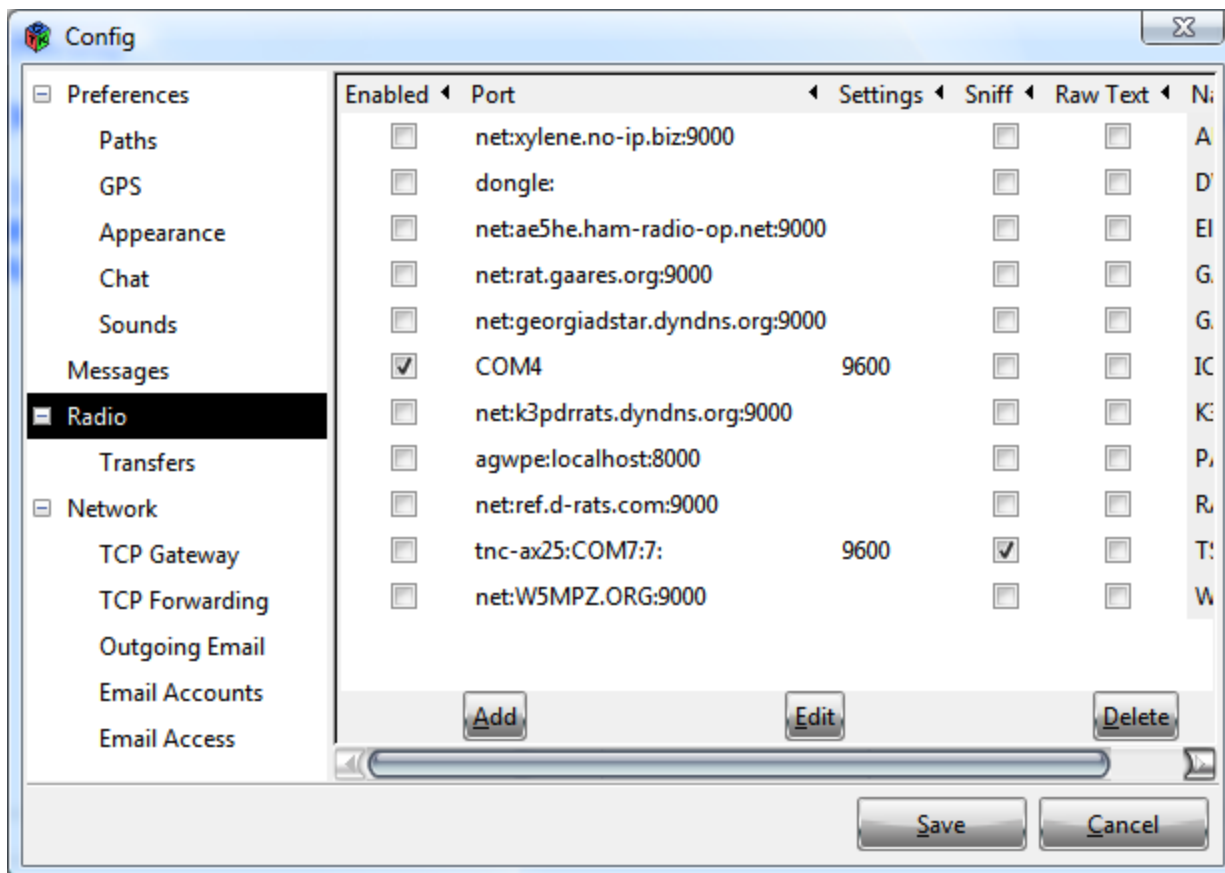


8. RF Segment with D-STAR radios

First, need to add a new “Radio” in Preferences, click Add then
(Use “D-RATS Part IV for D-STAR setup V2.DOC”



COM port should be a number 4 or less! Baud rate should be 4800 for ID-31A, 9600 for 2820 and 880H. COM port can be seen in Device Manager, use orange cable connection between computer and D-STAR radio



Check enabled for "ICOM" (or however you labeled it)
 Click Save (only enable the radio for initial checkout)

D-Star radio must have low-speed data settings. For example, GPS must be turned off since the low-speed data goes into the same frames as GPS. Chapter 4 in the ID-31A Advanced Instructions show the various menu settings required for low-speed data transmission. For other D-Star radio, search your manual for "low-speed data". For the ID-31A, the settings are:

Set the "GPS SELECT" option to "OFF", (MENU > GPS > GPS Set > **GPS Select, OFF**)

Set the "GPS OUT" option to "OFF", (MENU > GPS > GPS Set > **GPS Out, OFF**)

Set the "GPS TX Mode" option to "OFF", (MENU > GPS > **GPS TX Mode, OFF**)

Configure the serial data communication software as follows.

- Port : The COM port number which is used by the ID-31A/E.
- Baud rate : 4800 bps
- Data : 8 bit
- Parity : None
- Stop : 1 bit
- Flow control : Xon/Xoff

Function > DATA SPEED > 4800

For the ICOM 880H, the settings for low-speed data are:

GPS Tx Off

MENU (R&S) > GPS > (P&S), GPS Tx OFF

DATATx AUTO

MENU > (P&S) > DV SET > MONI (R&S) > DATATx > MONI > AUTO > MONI > MENU

Where R&S means rotate the left dial and select, P&S means push the left dial and select.

RF Segment with D-STAR radios (continued)

Now must setup D-STAR radio

For initial checkout, use Simplex

- Pick a repeater frequency and then change offset to 0.0000 (remember to reset after checkout)
- Set power output to Low or SLOW.

Test with only one radio

CHAT>Right Click Station Pane>Clear All

Right Click Station Pane>Ping All Stations (should see your radio transmit)

If radio transmits, proper setup

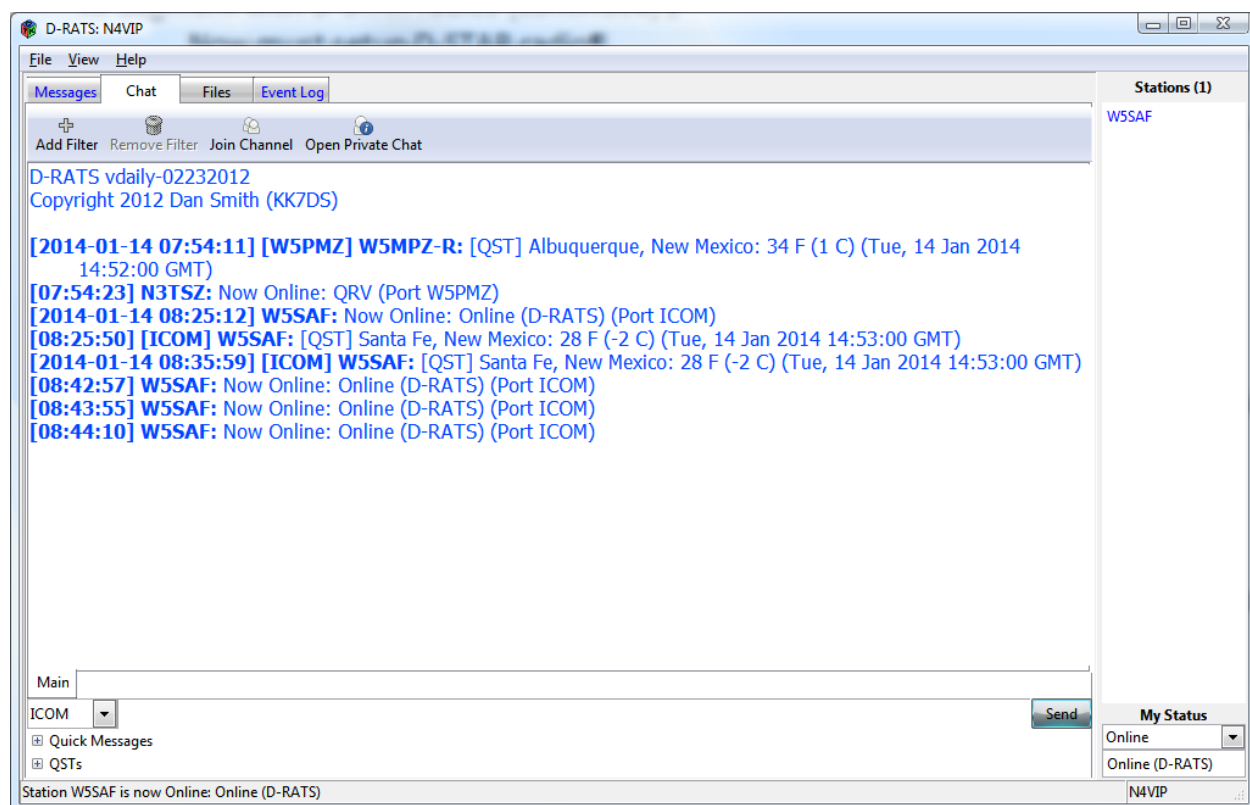
Test with two radios and D-RATS (perform on both radios)

CHAT>Right Click Station Pane>Clear All

Right Click Station Pane>Ping All Stations on both (should see both radios transmit)

Should see other stations call sign in Station Pane but not yours (never yours)

If both Station Panes show other station, RF Segment now established

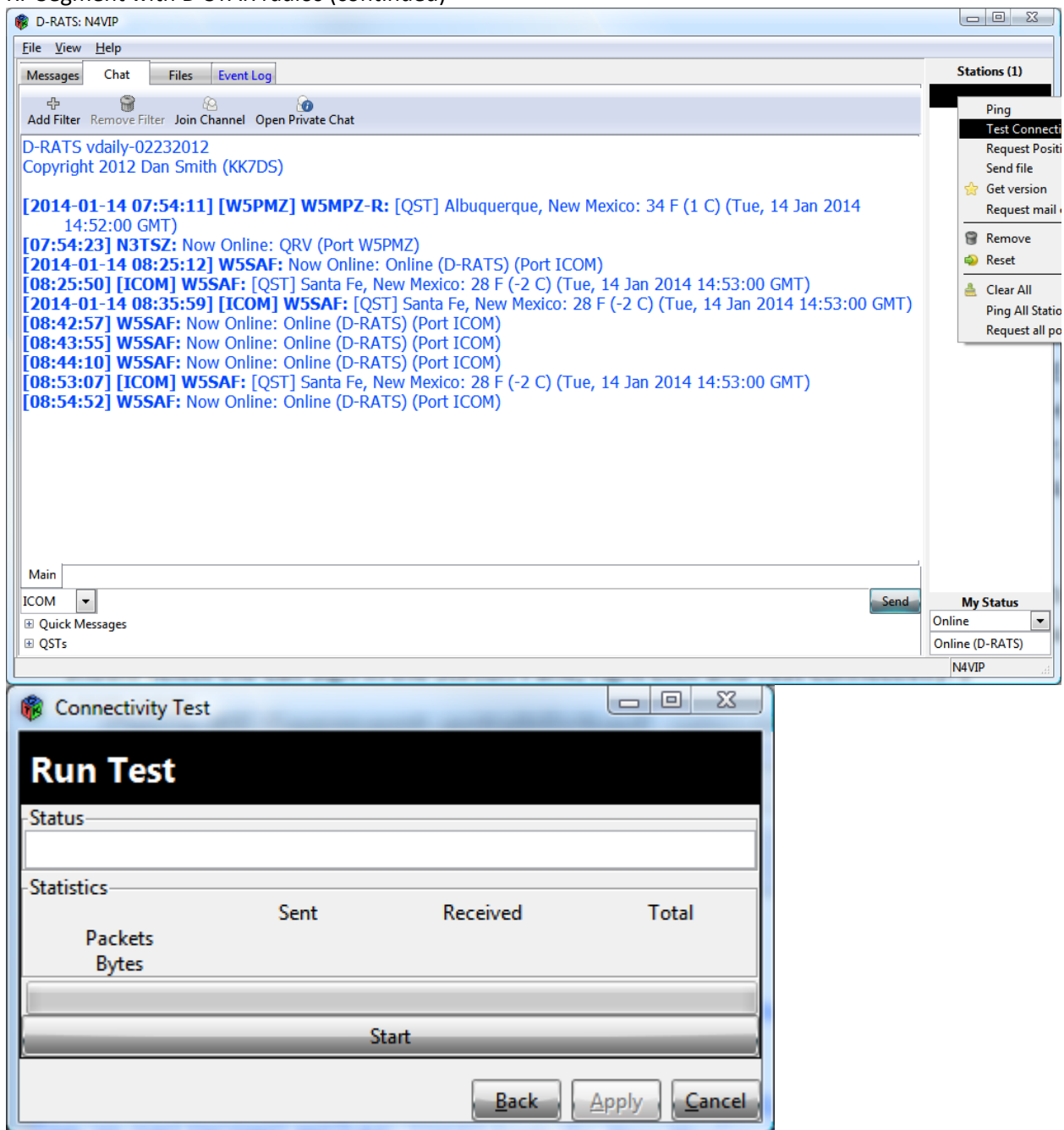


RF Segment with D-STAR radios (continued)

NOTE: WHEN IN THE RF SEGMENT AND USING A D-STAR RADIO, YOU MUST BE A HAM AND CALL SIGN IN D-RATS MUST BE REGISTERED! IN SIMPLEX, IT WILL WORK WITHOUT A CORRECT CALL SIGN BUT YOU ARE VIOLATING FCC RULES. TO USE A REPEATER OR REFLECTOR, CALL SIGN MUST BE REGISTERED AT ONE (AND ONLY ONE) D-STAR REPEATER. ONCE REGISTERED IN A D-STAR REPEATER, THE US TRUST SYSTEM VERIFIES THAT YOUR CALL SIGN IS LEGITIMATE BEFORE ALLOWING YOUR D-STAR RADIO TO TRANSMIT THROUGH ANY REPEATER OR THROUGH A REPEATER AND INTO A D-STAR GATEWAY, I.E. INTO THE INTERNET.

Once RF Segment established, you can do anything in the RF Segment you can do via internet, i.e. CHAT, FILES, MESSAGES. However, you must have a good RF link. To check RF link between two stations, you should select the Call Sign in the Station Pane, right click and Test Connectivity.

RF Segment with D-STAR radios (continued)



Click Start, 10 packets are sent and received and at the end of 10 you will receive a percentage. 70% is OK, 80% is better and 100% is a very good link. 80% or better should allow the RF segment to function properly.

9. Trouble shooting
 1. General
 - a. The D-RATS download is for a 32 bit Windows operating system. If your Windows operating system is 64 bits, you must install a 64 bit version of lzhufl_1.exe in your Program Files\D-RATS\libexec folder. The 64 bit version is 30K big while the 32 bit version is 29K.
 2. CHAT
 - a. Nothing in the Station Pane
 - i. check Preferences to ensure you have checked the correct "Radio"
 - ii. check lower left CHAT pull down to see that you have selected the correct Radio
 - iii. Right click in Station Pane to Ping All Stations
 - iv. If nothing above works, check to see if you are connected to Internet
 - b. Other stations not receiving your sent Chats
 - i. Check that you are sending to the correct "Radio", check lower left pull down
 - c. Don't see chats in Main Window
 - i. Check for filter or channel window, remove filter if necessary
 3. FILES
 - a. Don't see your list of shared files, check Preferences to be sure File Transfer Path is defined
 - b. Don't see a list of shared files for other station, check Port and Station Name show in upper right pull downs and that you have connected
 4. MESSAGES
 - a. FOR ALL TROUBLES WITH MESSAGES, FIRST CHECK THAT YOU CAN SEND OUT AN EMAIL TO YOURSELF (GOES TO OUTBOX) AND RECEIVE IT BACK (GOES INTO INBOX). IF THIS DOESN'T WORK, NOTHING WILL
 - b. ALSO CHECK THAT YOU ENTERED YOUR CALL SIGN IN EMAIL ACCESS IN PREFERENCES
 - c. Messages sit in the Outbox but don't go out, check that you have entered correct name and password for SMTP (Outgoing Email in Preferences)
 - d. Nothing appears in the INBOX when you are certain traffic has been sent to you, check that you have entered correct name and password for POP (Email Accounts in Preferences)
 - e. WL2K messages don't leave the Outbox, check that you prefaced email with WL2K:
 5. MAPS
 - a. No Data appears when you use the Map Function, have you made your initial Map Download?
 - b. Overlays that you have created or are using don't show, ensure that the Overlay is checked in the lower left pane.
 6. RF Segment
 - Low speed data communications
 - GPS must be turned off (there are several settings depending on ICOM model)
 - Data TX must be Auto (NOT PTT)
 - Test connectivity, 80% or better between stations is necessary

10. Resources

1. D-RATS Training Farmington.DOC
2. Gmail accounts for D-RATS.TXT
3. WINLINK accounts for D-RATS.TXT
4. D-RATS_Operating_Guide_Addendum_02232012.PDF
5. Email showing up in you Outbox in D-RATS.DOC
6. D-RATS&GmailIV.PDF
7. D-RATS configuration Part I Rev 1.DOC
8. D-RATS configuration Part II Rev 1.DOC
9. Key NM SAR Ham Repeaters.CSV
10. D-RATS Creating Static Overlays.PDF
11. D-RATS Installing spelling support.PDF
12. D-RATS_and_packet_radio-The_Third_Way.PDF
13. D-RATS_Basic_E-mail_Procedures.PDF
14. D-RATS_operating_guide_0.3.3.PDF
15. D-RATS Part IV for D-STAR setup V2.DOC