



D-STAR InfoCon 2014

at Dayton Hamvention

Part 3—Doing More With D-STAR

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What is D-RATS?

- D-RATS is a free, easy to use, multi-platform data communications package that provides messaging, email, file transfer, mapping and position reporting written by Dan Smith, KK7DS
- Originally developed for use with D-STAR radio
 - Also used with Internet connection (no radio)
 - Developing AX.25/packet interface
- Download at www.d-rats.com





Why Use D-RATS?

- D-RATS can be used for simple data communications between one or more stations
- Can be used to support Emergency Communications (adopted by GA ARES as one of three data applications)
- Use without radio on Internet
- Allows use of tactical calls while radio transmits legal FCC callsign
- Can be used for displaying positions of D-STAR GPS equipped stations





Who Can Use D-RATS?

- Multi-platform
 - Windows (2000, XP, 7)
 - Mac OS
 - Linux
- Multiple Interfaces
 - D-STAR Radio
 - Internet connection
 - DV Dongle
 - KISS TNC





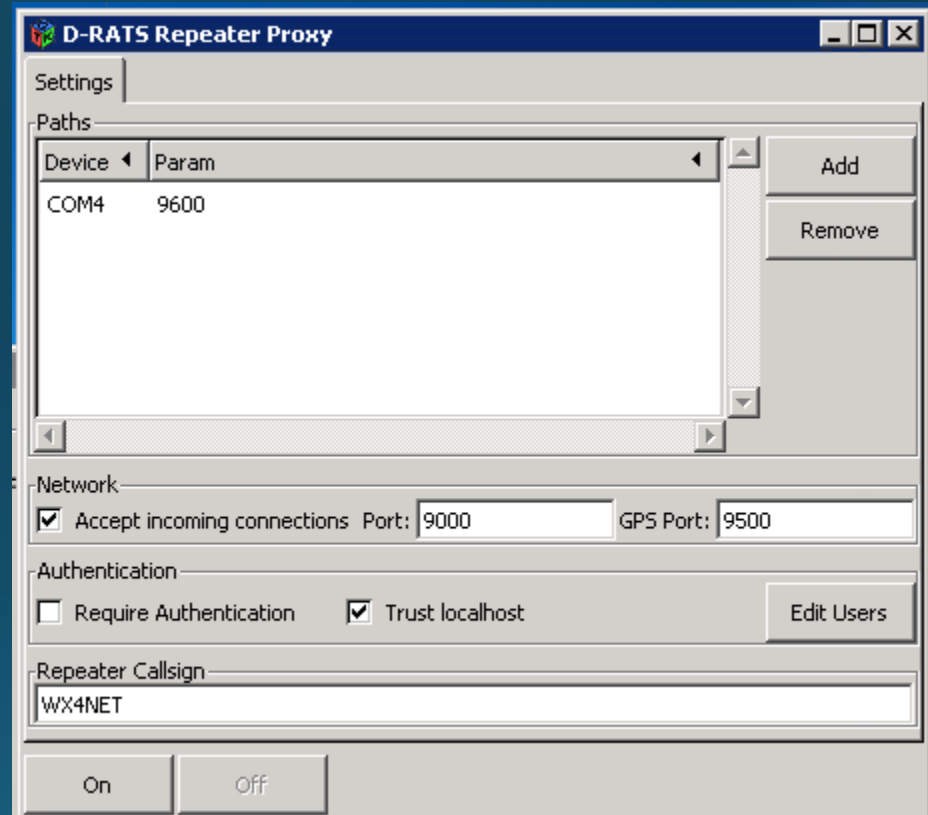
D-RATS Functions

- **Messaging** – radio messages, email, Winlink 2000
- **Chat** – quick, simple keyboard-to-keyboard, multi-user, private channels
- **File Transfer** – unattended file sharing, upload/download from common shared site
- **Forms** – Use predefined forms (NTS, ICS-213) or add custom forms
- **Mapping/Position Reporting** – map download, GPS position reporting on map



What is a Ratflector?

- Bridges all connections defined (radio, Internet)
- Provides path from radios to Internet for email, Winlink 2000
- Allows both Internet-based and radio users to connect together
- Allows bridging of multiple Ratflectors





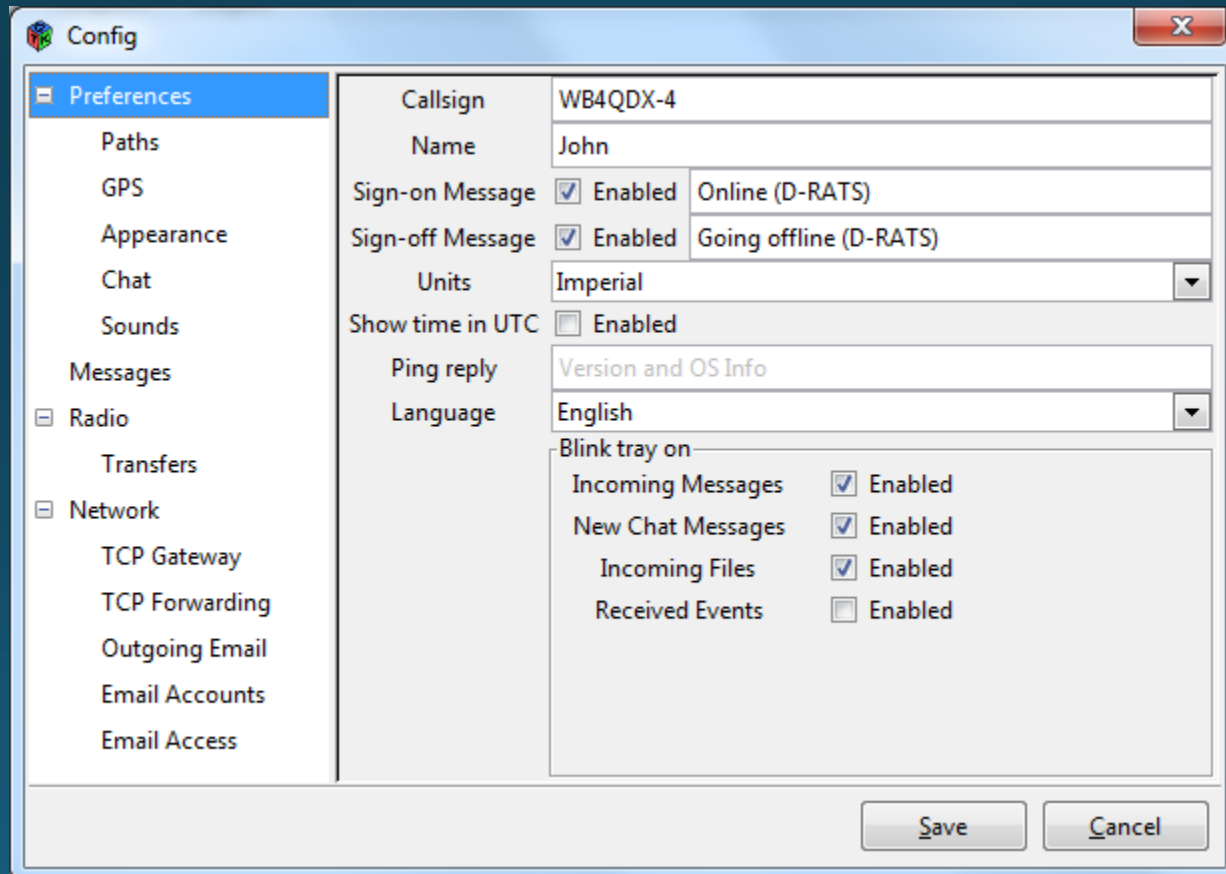
Getting Started With D-RAT

- Getting Started document on GwinnettARES Yahoo Group in Files section
- Download and install latest version
 - www.d-rats.com/download
 - Current version – 0.3.3
- Setup preferences
 - File / Preferences (General station information)
 - File / Preferences / Radio (Com ports)



Setup – General Info

- Use callsign or tactical call for EmComm

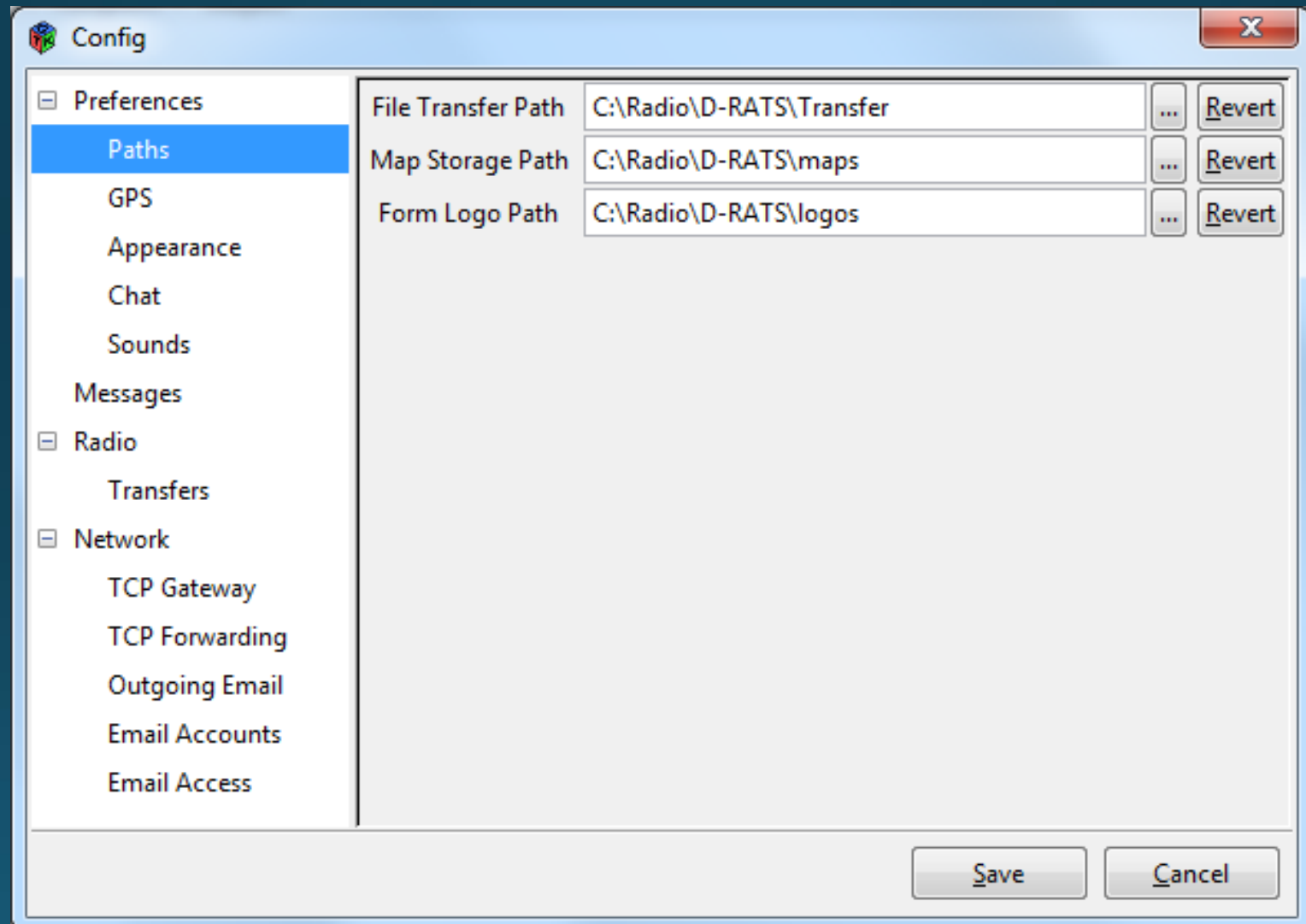


The screenshot shows the 'Config' window with the 'Preferences' tab selected. The 'General Info' section is visible, containing the following fields and options:

Callsign	WB4QDX-4	
Name	John	
Sign-on Message	☒ Enabled	Online (D-RATS)
Sign-off Message	☒ Enabled	Going offline (D-RATS)
Units	Imperial	
Show time in UTC	☐ Enabled	
Ping reply	Version and OS Info	
Language	English	
Blink tray on		
Incoming Messages	☒ Enabled	
New Chat Messages	☒ Enabled	
Incoming Files	☒ Enabled	
Received Events	☐ Enabled	

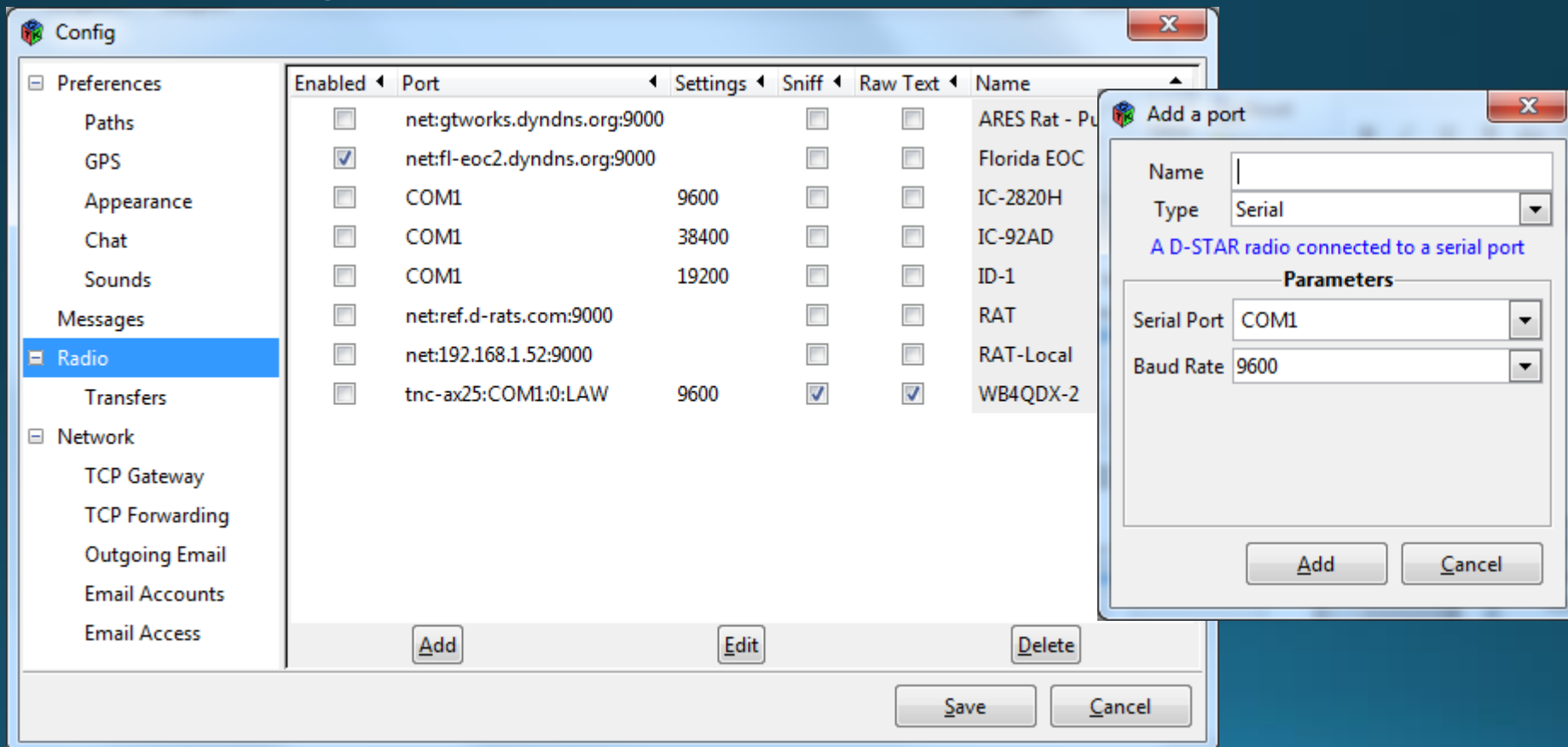
At the bottom of the window are 'Save' and 'Cancel' buttons.

Setup -Paths



Setup - Radio

- Configure radios, Ratflectors, TNCs



The screenshot shows the 'Config' window with the 'Radio' tab selected. The 'Radio' tab displays a list of configured radios with columns for Enabled, Port, Settings, Sniff, Raw Text, and Name. The 'Add a port' dialog is open, showing the 'Serial' type selected and the 'Parameters' section with 'Serial Port' set to 'COM1' and 'Baud Rate' set to '9600'.

Enabled	Port	Settings	Sniff	Raw Text	Name
☐	net:gtworks.dyndns.org:9000		☐	☐	ARES Rat - Pu
☒	net:fl-eoc2.dyndns.org:9000		☐	☐	Florida EOC
☐	COM1	9600	☐	☐	IC-2820H
☐	COM1	38400	☐	☐	IC-92AD
☐	COM1	19200	☐	☐	ID-1
☐	net:ref.d-rats.com:9000		☐	☐	RAT
☐	net:192.168.1.52:9000		☐	☐	RAT-Local
☐	tnc-ax25:COM1:0:LAW	9600	☒	☒	WB4QDX-2

Add a port

Name:

Type:

A D-STAR radio connected to a serial port

Parameters

Serial Port:

Baud Rate:



Messaging

- Used to send/receive messages between stations, Internet email users
- Addressable to specific station
- Familiar email look and feel
- Message can be email, form or memo format
- Standard forms included (ICS-213, radiogram), create custom forms easily
- Station to station – can use callsign or tactical call for addressing
- Send and receive to Internet email addresses
- Compatible with Winlink 2000 addresses
- Supports attachments (small file size recommended)



Messaging Screen

D-RATS: WB4QDX-4

File View Help

Messages Chat Files Event Log

New Forward Reply Delete Mark Read Mark Unread Send/Receive

Drafts
Inbox
Outbox
Sent
Trash

Sender	Recipient	Subject	Type	Date
WB4QDX-4	WB4QDX-4	Test message	email	10:18:37 2011-04-20
WB4QDX-4	WB4QDX-4	Test message	email	10:14:09 2011-04-20

Stations (16)

- IW5BVM
- 9A6AIB-5 (1m)
- 9Z4CG-1 (1m)
- W4KTJ (1m)
- KG4Q (1m)
- N1KXJ (1m)
- N1RCW (1m)
- 9Y4PJ (1m)
- IK5PWA-L (1m)
- LA2MQ (1m)
- VE7AAT (1m)
- ON2AAV (1m)
- IW2OHX-L (1m)
- ON0THN (1m)
- OE1OWA (1m)
- N1SO D (1m)

My Status

Online

Online (D-RATS)

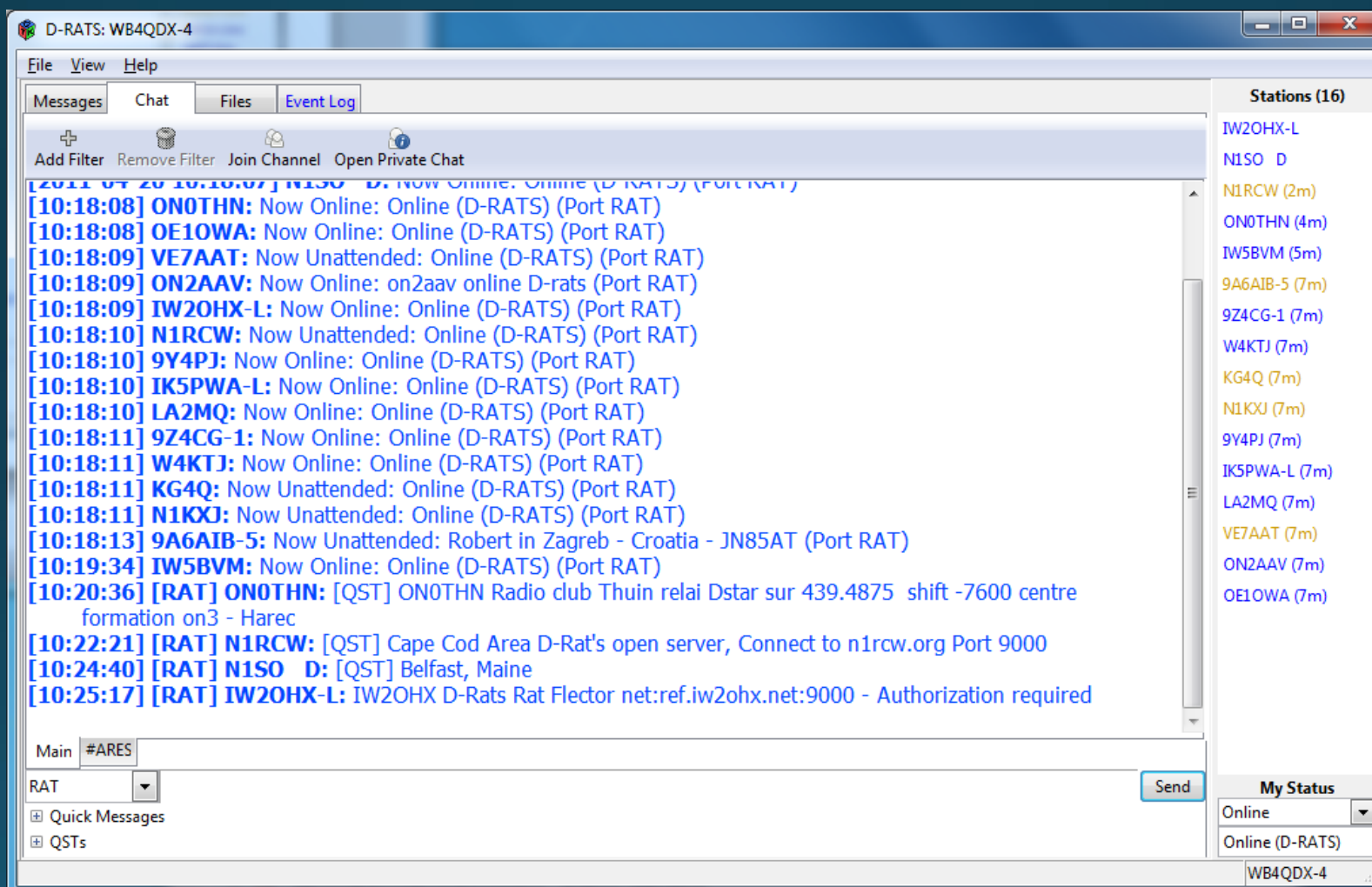
Station IW5BVM is now Online: Online (D-RATS)

WB4QDX-4

Chat

- Chat provides broadcast messages
- Can filter on strings (callsign, keywords, etc.)
- Channels provide “chat rooms” off main channel
- Private chat with specific stations

Chat Screen



D-RATS: WB4QDX-4

File View Help

Messages Chat Files Event Log

+ Add Filter Remove Filter Join Channel Open Private Chat

[10:18:08] ON0THN: Now Online: Online (D-RATS) (Port RAT)

[10:18:08] OE1OWA: Now Online: Online (D-RATS) (Port RAT)

[10:18:09] VE7AAT: Now Unattended: Online (D-RATS) (Port RAT)

[10:18:09] ON2AAV: Now Online: on2aav online D-rats (Port RAT)

[10:18:09] IW2OHX-L: Now Online: Online (D-RATS) (Port RAT)

[10:18:10] N1RCW: Now Unattended: Online (D-RATS) (Port RAT)

[10:18:10] 9Y4PJ: Now Online: Online (D-RATS) (Port RAT)

[10:18:10] IK5PWA-L: Now Online: Online (D-RATS) (Port RAT)

[10:18:10] LA2MQ: Now Online: Online (D-RATS) (Port RAT)

[10:18:11] 9Z4CG-1: Now Online: Online (D-RATS) (Port RAT)

[10:18:11] W4KTJ: Now Online: Online (D-RATS) (Port RAT)

[10:18:11] KG4Q: Now Unattended: Online (D-RATS) (Port RAT)

[10:18:11] N1KXJ: Now Unattended: Online (D-RATS) (Port RAT)

[10:18:13] 9A6AIB-5: Now Unattended: Robert in Zagreb - Croatia - JN85AT (Port RAT)

[10:19:34] IW5BVM: Now Online: Online (D-RATS) (Port RAT)

[10:20:36] [RAT] ON0THN: [QST] ON0THN Radio club Thuin relai Dstar sur 439.4875 shift -7600 centre formation on3 - Harec

[10:22:21] [RAT] N1RCW: [QST] Cape Cod Area D-Rat's open server, Connect to n1rcw.org Port 9000

[10:24:40] [RAT] N1SO D: [QST] Belfast, Maine

[10:25:17] [RAT] IW2OHX-L: IW2OHX D-Rats Rat Flector net:ref.iw2ohx.net:9000 - Authorization required

Main #ARES

RAT

+ Quick Messages

+ QSTs

Send

Stations (16)

- IW2OHX-L
- N1SO D
- N1RCW (2m)
- ON0THN (4m)
- IW5BVM (5m)
- 9A6AIB-5 (7m)
- 9Z4CG-1 (7m)
- W4KTJ (7m)
- KG4Q (7m)
- N1KXJ (7m)
- 9Y4PJ (7m)
- IK5PWA-L (7m)
- LA2MQ (7m)
- VE7AAT (7m)
- ON2AAV (7m)
- OE1OWA (7m)

My Status

Online

Online (D-RATS)

WB4QDX-4

File Transfer

- Allows unattended file transfers between stations
- View remote station files
- File transfers use error checking
- All file formats supported

File Transfer Screen

D-RATS: WB4QDX-4

File View Help

Messages Chat Files Event Log

Refresh Delete Upload Local

Connect Disconnect Download

Station: 9A6AIB-5 RAT

Filename	Size	Date
660_ACD_LOGGER.wax	1.1 KB	17:57:54 2010-10-30
9A6AIB-Ports-2010-12-19.txt	2.0 KB	17:20:08 2010-12-19
9A6AIB_Ratreflector_list_2010-12-19.txt	1.0 KB	16:59:25 2010-12-19
BD2139-Donna-inutile.jpg	61.0 KB	13:51:20 2011-01-22
Chr-9A-win.txt	14 B	21:25:29 2010-12-13
D-RATS on Dongle.doc	27.0 KB	20:40:56 2010-12-22
D-RATS operating guide.doc	597.0 KB	23:28:03 2010-12-07
D-RATS_User_Manual.pdf	624.0 KB	23:06:06 2010-12-07
Icom_cables.pdf	21.0 KB	23:19:10 2010-12-05
Interface_cable_for_the_On[1].pdf	26.0 KB	07:26:26 2010-12-13
Kenwood Connector.pdf	283.0 KB	22:50:19 2010-12-07
Mobile_1200MHzant.pdf	82.0 KB	07:27:50 2010-12-30
Operating with D-RATS.doc	305.0 KB	23:28:20 2010-12-05
Ratreflector_list.txt	910 B	07:28:31 2010-12-30
resized_badbananas.jpg	9.0 KB	07:22:22 2010-12-30
resized_donotdisturb.jpg	10.0 KB	07:23:39 2010-12-30
resized_resized_Ohmslaw.jpg	15.0 KB	00:25:19 2011-04-09
Test.txt	38 B	10:29:27 2011-02-11

Stations (19)

- 9A6AIB-5
- VE7UG
- N1RCW (1m)
- N1KKJ (2m)
- N1SO D (2m)
- LA2MQ (2m)
- KG4Q (4m)
- 9Z4CG-1 (9m)
- ON0THN (9m)
- OE1OWA (9m)
- IW2OHX-L (9m)
- ON2AAV (9m)
- VE7AAT (9m)
- W4KTJ (9m)
- IK5PWA-L (9m)
- KB3ONM (9m)
- KB3ONM-2 (9m)
- 9Y4PJ (13m)
- IW5BVM (20m)

My Status

Online

Online (D-RATS)

WB4QDX-4

Connected to 9A6AIB-5

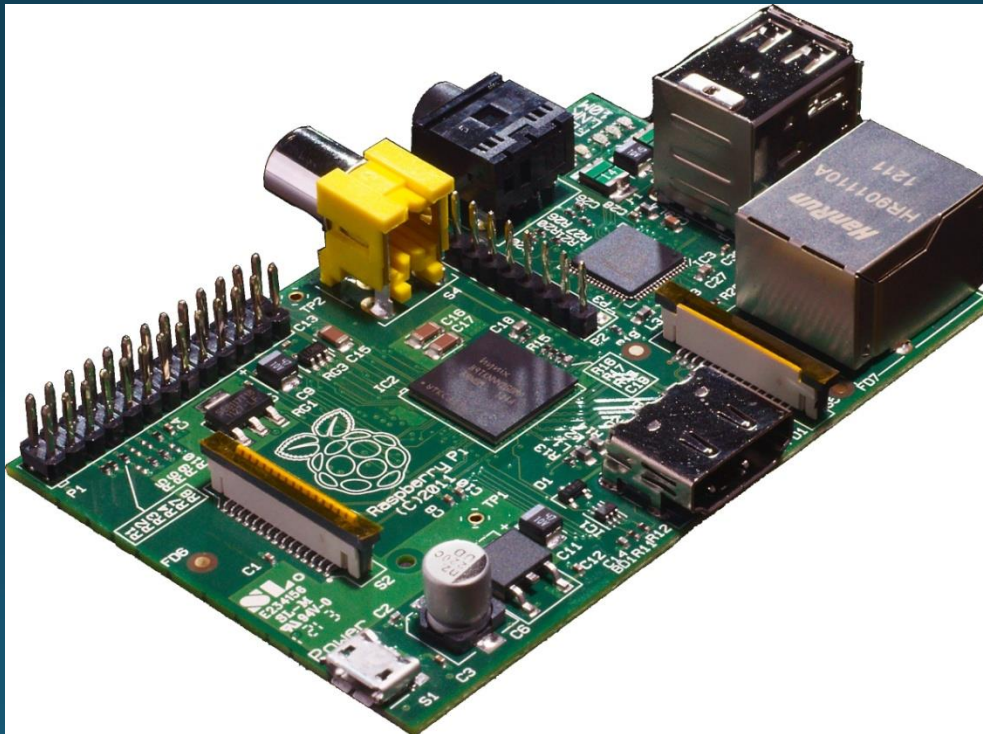
Using a DVAP

- Normal connection to DVAP is a PC, Laptop or Netbook (bulky) with Internet connection



Add a Raspberry Pi?

- Credit card sized Linux computer with SD Card slot, 2 USB, Ethernet and HDMI ports powered by 5VDC micro-USB adapter



DVAP / Pi Configuration

- DVAP connects to Pi through USB
- Wi-Fi adapter on 2nd USB (external Internet source required)
- SD card with OS and DVAP software
- Micro USB power to AC or DC source



Homebrew DVAP Package



Pelican 1050 or 1060 Case

USB Charger/5VDC Supply
Anker 10,000 mAH or
equivalent

USB Adapter
(120VAC to 5V USB)

Micro-USB Cable

Raspberry Pi Model B

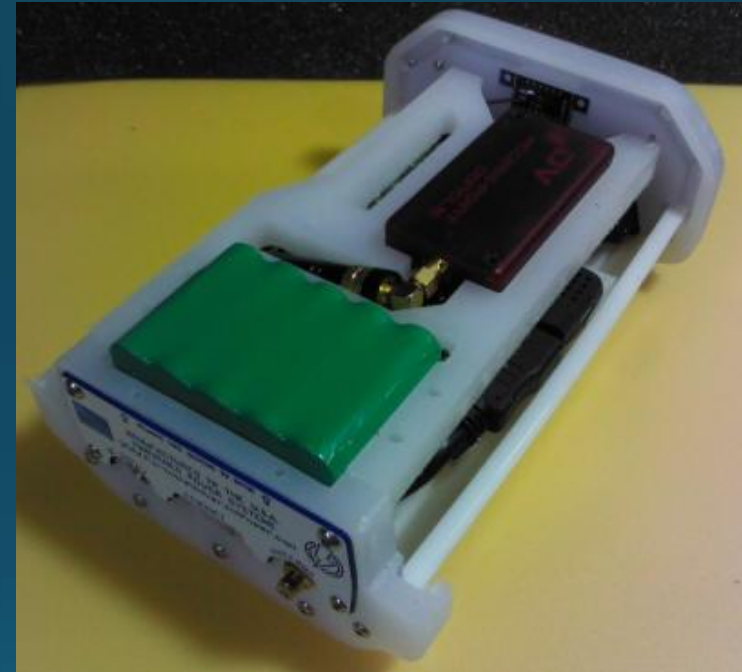
DV Access Point

USB CLA (12V to 5V USB)

Making It Work

- Download image file and instructions
 - DVAPtool version:
<https://www.dropbox.com/sh/mfyw3j6dwkpmriz/V56pE5JqTL>
 - ircDDB version:
<http://www.westerndstar.co.uk/Downloads/DVAP+ircDDB+VNC.rar>
- Install OS image to SD card using Win32DiskImager
- Power up Pi with SD card installed, HDMI monitor, keyboard, mouse and Internet connection (Ethernet or Wi-Fi)
- Configure DVAPtool or DVAPnode and ircDDB per instructions
- Configure WiFi sources (Mobile Hotspots, home WiFi, etc)
- Can run “headless” after that...just power up, finds defined WiFi sources

DHAP



- Commercially available from Hardened Power Systems
<http://www.portableuniversalpower.com/DHAP.htm>
- User supplies DVAP (2m or 70cm)

D-STAR on HF

- Icom IC-7100 and IC-9100 are both DV capable on HF
- Operates at similar bandwidth to AM
- D-STAR HF nets now operating several nights a week
- Net info at <http://www.dstarinfo.com/DSTARHFNet.aspx>





ID-5100 Demo

