



# D-STAR InfoCon 2015

at Dayton Hamvention

*Part 3 – Doing More With D-STAR*

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# D-STAR's 1.2 GHz Radio



- Icom ID-1
- Operates FM Voice or GMSK (D-STAR) modes
- D-STAR modes include voice, low speed data (1200 bps) or high speed data (128 kbps)
- 10W transmit output



# ID-1 High Speed Data Mode

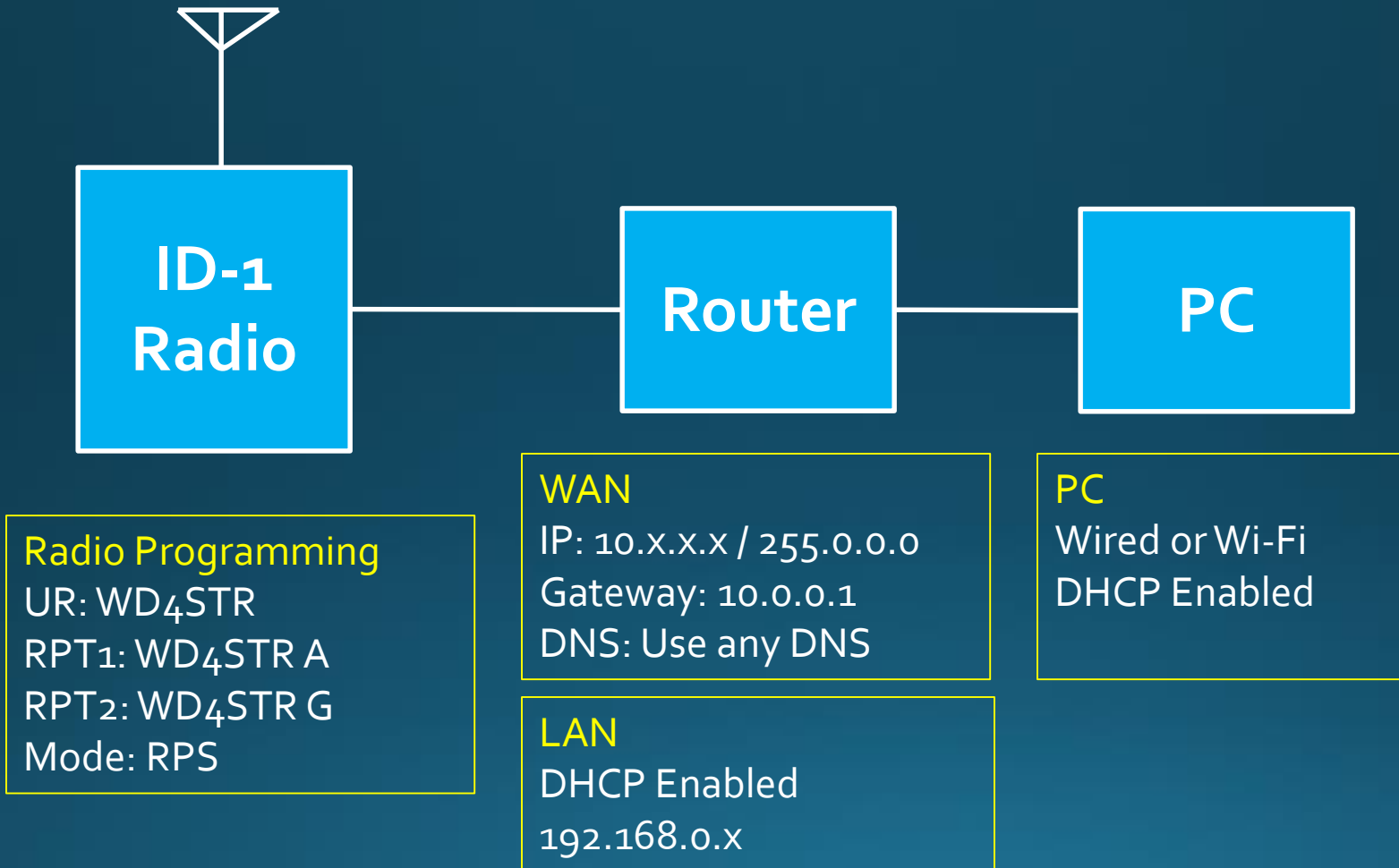
- Radio acts as Ethernet wireless bridge
- Has RJ-45 Ethernet connector for HS data
- Can be used for Internet connectivity through D-STAR repeater with DD module
- Can be used to create wireless bridge between two points
- When communicating through DD repeater, know assigned IP address (10.x.x.x)



# High Speed Data – DD Mode

- Ethernet connection to PC
- PC must use assigned IP address assigned at registration (10.x.x.x)
- Gateway is 10.0.0.1
- Use known DNS addresses
- ...or the easy way is to insert a router between ID-1 and PC and use DHCP!

# Setup With Router



# DV Dongles

- Different styles available from Internet Labs (DV Dongle), NW Digital (Thumb DV) and MoenComm (Star\*DV)
- Attaches to USB port on PC
- Accesses D-STAR network using sound card in PC connected to Internet
- A new Dongle product to be announced in D-STAR Forum today



# DVAPs

- DV Access Point is low power hotspot providing radio access to D-STAR network through PC
- Developed by Internet Labs (Robin Cutshaw, AA4RC)
- Connects to PC, Raspberry Pi by USB
- 10mW RF power for 100m range
- D-STAR radio uses standard commands for linking
- Software on PC, Pi (DVAPtool or DVAPnode)
- Internet access on PC, Pi to network



# Using a DVAP

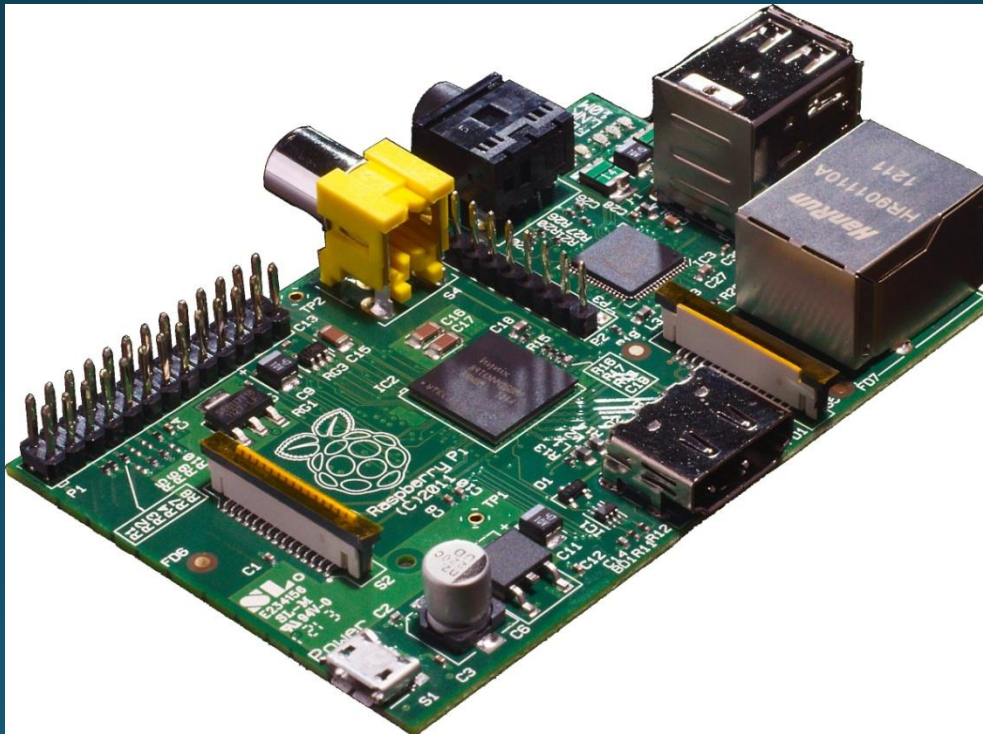
- Normal connection to DVAP is a PC, Laptop or Netbook (bulky) with Internet connection





# 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 2<sup>nd</sup> USB (external Internet source required)
- SD card with OS and DVAP software
- Micro USB power to AC or DC source



# Homebrew DVAP Package

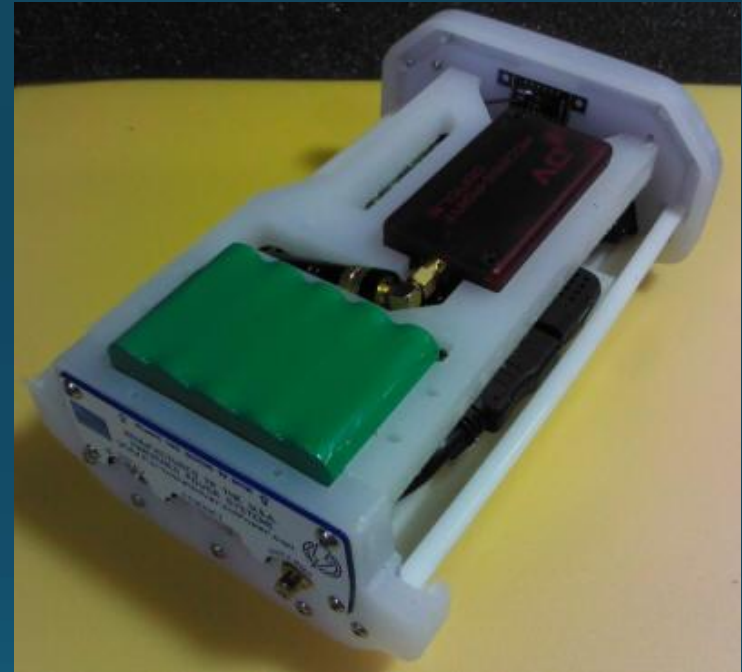




# Making It Work

- 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> or
  - <http://maryland-dstar.org/html/raspiberry.html>
- 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

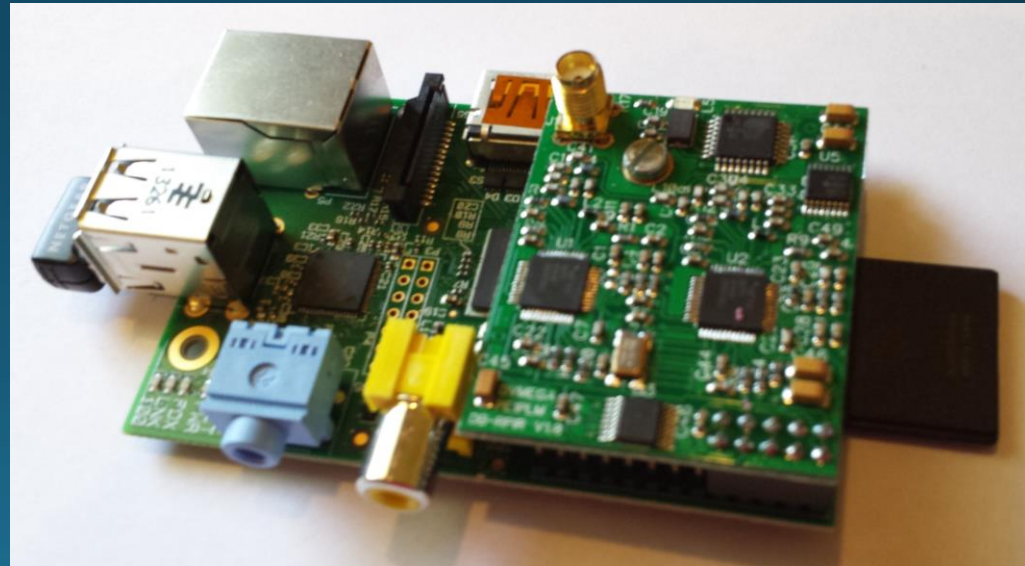
# DHAP



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

# DV Mega

- Low power hotspot similar to DVAP (single or dual band versions)
- Attaches to Raspberry Pi GPIO connector (Pi Model B, B+, Pi 2) or Arduino
- SD card with OS and ircDDBgateway software
- Use Wi-Fi dongle or wired Ethernet
- Micro USB power to AC or DC source
- Use ircDDBgateway SD card images from Maryland D-STAR and Western D-STAR



# 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>





# D-STAR Android App

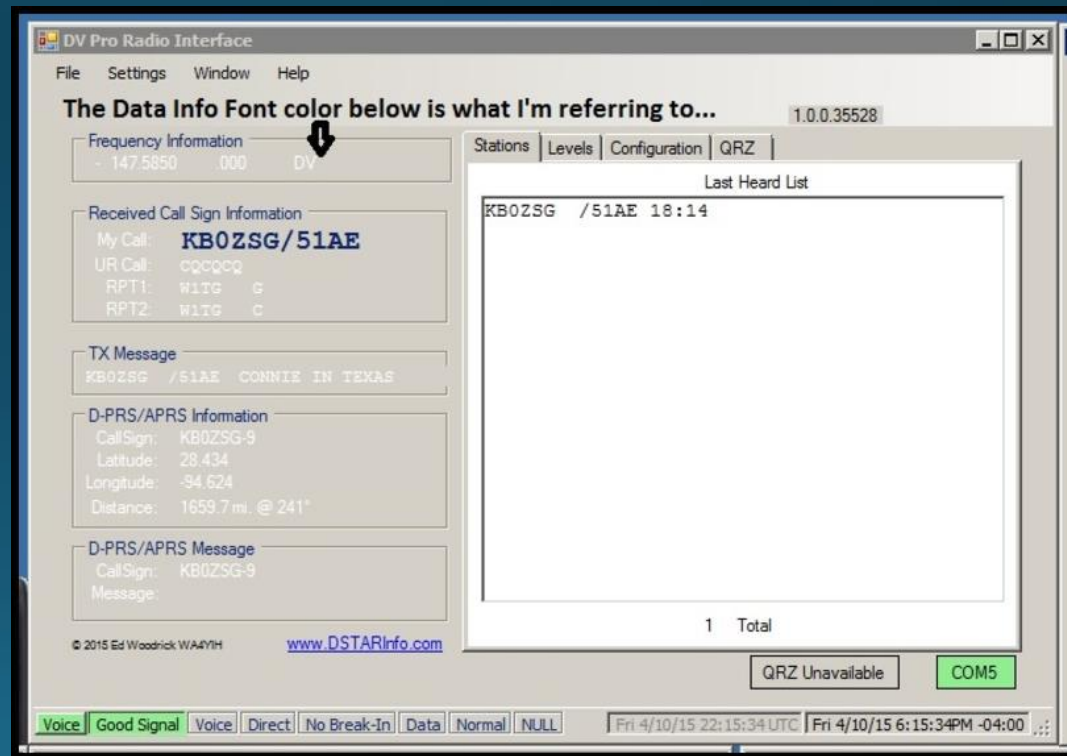
- Remote control app for certain Icom radios (ID-5100, ID-31, ID-51, IC-7100)
- Connect by OPC-2350LU cable or Bluetooth to Android device
- DR function control
- Text messaging
- Map
- Send/receive photos (camera or file)
- RX history





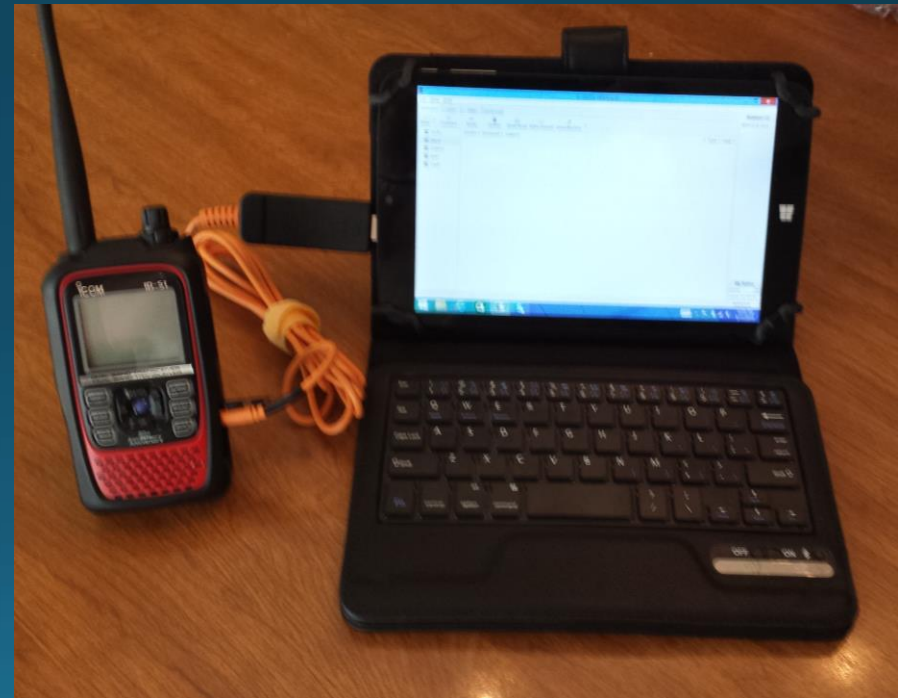
# DV Pro

- PC application to display radio information
- Works with ID-51 AE, ID-51 Plus and ID-5100 radios
- Useful for monitoring, D-STAR Net NCS, radio control
- Data cable connects PC to radio
- Free download at [www.dstarinfo.com/dv-pro.aspx](http://www.dstarinfo.com/dv-pro.aspx)



# D-RATS for Data

- D-RATS is full featured program for D-STAR data
- Features messaging, forms, file transfer and mapping
- May be used with D-STAR radio or Internet
- Runs on Windows, Mac or Linux
- [www.d-rats.com](http://www.d-rats.com)



Anyone ready to take home an  
ID-51A Anniversary Edition  
handheld?

