Fun New Ways to use D-Star

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Digital Ham Radio?

I’ve done it. Got my Novice license in 1959

Well, CW was the 1st digital mode...
What’s New, What’s Classic?

I only go back to the SSB vs. AM wars
• First transmitter: Globe Chief Deluxe (75 watts CW)
• Upgraded in 1960, added VFO & screen modulator (AM)
• In 1961 I went SSB
• The AMers could not stand the squawks coming our of their receivers
• Yet today I can still hear AMers on the air

What did I learn?
• Many of us don’t like change
• The old ways were super and we should keep them
• But new ways are also fun
Digital Ham Radio?

- RTTY has been around for years
- PSK31 and many others use PCs for keyboard to keyboard QSOs via RF
- Ever seen someone having a PSK QSO?
- Can you spell Macro?

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D-Star: Most successful Digital Voice mode so far

- JARL facilitated open RF protocol using AMBE chips for CODEC
- Only ICOM so far has produced radios
- K6LRG (Ian W6TCP, Trustee), K6MDD, W6CX are some of the Bay Area D-Star repeaters
- Hams have begun to homebrew extensions to D-Star, including HotSpots
What’s a HotSpot?
Why HotSpots?

- If your QTH has no RF access to a D-Star repeater
- Or (like my QTH) is in a multipath shadow
- Or you want to link to whatever repeater whenever you want
- Or you need extra power for extra range
- Analog Radio must provide access to discriminator and to direct FM modulator (9600 Data Port normally works)
- PC runs free software (DVAR, WinDV, others)
- GMSK Modem interfaces the PC and the radio
Just what is a GMSK Node Adapter?

- Also called Mini Hot Spot (MHS) or GMSK Modem
- TX: generates gmsk audio for analog FM transmitter
- RX: demodulates audio for processing by PC
- Decodes the gmsk protocol (headers, routing info)
- Does NOT decode or generate Digital Voice stream
- So you need a D-Star radio to use it
- Relatively inexpensive
GMSK Node Adapter Sources

- **Fred van Kempen** PA4YBR

- **Matrix Circuits & MoenComm**
  - [http://www.moencomm.com](http://www.moencomm.com). Provides built SMT boards based on PA4YBR’s design, comes with DUTCH*Star firmware and tools.

- **Satoshi Yasuda** 7M3TJZ/AD6GZ
5 Simple Steps to Setup HotSpot
Check out www.k6jm.com/dstar

1. Register on the D-Star network
2. Install software tools to configure & test
3. [Load firmware on GMSK Node Adapter board]
4. Configure and test board
5. Install & Configure software (e.g. DVAR, WinDV)
More uses for GMSK Node Adapter

- Convert analog FM radio to D-Star DV
- Put up inexpensive DV repeater using analog radios

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Transmit D-Star DV over Analog FM radio

- PC App: **GMSKClient** by Jonathan Naylor, G4KLX (Windows, Linux)
  - Available in Files section of “dstar_development” Yahoo group
- Analog radio with 9600 Data port (VHF/UHF or HF)
- GMSK node adapter same as used by HotSpot
- DV Dongle provides access to AMBE codec chip used to encode/decode DV
- Talk to those IC-9100s using D-STAR on 6 and 10 meters
- D-STAR DX on HF!
- Inexpensive
- Cheaper than the Alternative
  - DV Adapter 2.0 ($600) has LCD, control pad, does not need PC
• Hardware is not expensive (but don’t forget the duplexer)
• Choices for software: WinDV, DVAR are simple
• G4ULF (Linux) creates G2 compliant D-Star Repeater
• G4KLX “GMSK Repeater” + ircDDB Gateway
What’s in the Works?

• New DSP boards with powerful CPUs
  – Fewer dedicated chips, software does the work
  – DV-RPTR (Germany)
    • Open source firmware and board design
    • Very new, slow delivery, but should improve
    • May represent future design model for ham boards
  – ON8JL’s Standalone D-Star Node
    • Large processor, ethernet connector
    • Firmware does what PC normally does
    • New and very expensive, but interesting
What else is coming?

• Boards with AMBE codec chip
  – Plug headset into Hotspot board, hear and generate D-Star digital voice
  – Don’t need D-Star radio in the shack

• Cheaper DV Adapters
  – Add D-Star to analog radio without needing a PC
  – Add AMBE chip, LCD and control pad

• All kinds of new software
Shameless Plug

www.moencomm.com

I sell the Star*Board Node Adapter
Includes DUTCH*Star firmware
$119 SMT board
Professionally fabricated
Great support
Summary

• Do It Yourself is still fun
• This stuff is easy - We can all do it
• Lots of support available
  – Getting Started:  www.k6jm.com/dstar
  – Yahoo Groups:
    • gmsk_dv_node
    • dstar_development
    • gmsk_dv_modem
    • DVRPTR
  – Vendors’ sites:
    • MoenComm K6JM  www.moencomm.com
    • Fred van Kempen PA4YBR  www.dutch-star.eu
    • Satoshi Yasuda 7M3TJZ/AD6GZ  d-star.dyndns.org/