



RADIO AMATEUR News & Views

The Official Journal of the Radio Amateurs of Northern Vermont

September • 2012

An ARRL Special Service Club

Vol. 22 • No. 9

NEXT MEETING: SEPTEMBER 11

“WORLD RADIO TEAM CHAMPIONSHIP”

DAVE PASCOE, KM3T, WRTC DIRECTOR, WILL BE OUR GUEST SPEAKER IN September. Dave has been both a referee and a competitor at WRTC events. He has a strong single-op contesting record and has helped develop several multi-op stations/teams. Dave is a member of the CQWW Contest Committee and has developed software tools for contest support, including tools for entry processing and live streaming audio from contest stations. He is, also, the founder/owner of *LiveATC.net* and is also a management and technology consultant.

Following the presentation will be snacks and a chance to catch up with folks.



CODEC2

—NEXT-GENERATION DIGITAL VOICE FOR TWO-WAY RADIO

Jeff N1YWB

CODEC2 IS AN AWESOME, NEW, AWARD WINNING, free as-in freedom, open source, digital voice codec. Codec2 was developed by by David Rowe Ph.D., VK5DGR, specifically to avoid the intellectual property encumbrances of the digital voice codecs currently in use.

By now you've probably heard of D-STAR. What you may not know is that the voice encoding protocol (codec) used by D-STAR, AMBE, is a proprietary patented trade secret.* Under no circumstances may you inspect, dissect, examine, or modify the codec. This is not in the spirit of amateur radio! Unfortunately most of the other digital voice codecs in use today suffer from similar encumbrances.

In 2008, well-known open source advocate and Amateur Extra Bruce Perens, K6BP, recognized the danger of closed codecs, and began to advocate and evangelize the need for a free as-in freedom codec for hams. Thankfully, Bruce was able to recruit successful open source codec developer David Rowe to our cause. David has an impressive and extensive digital voice resume; his Speex codec is already one of the most popular VoIP codecs on the Internet.

Dave et al have designed Codec2 and created a free open source reference implementation, released under the GNU Lesser General Public License, meaning that it's free and easy to incorporate into other software, even commercial applications. The reference implementation is written in C and targets Linux, with work on Windows compatibility underway (Cygwin is already supported). I was able to download it and easily compile it on my Ubuntu Linux box and encode/decode some sample audio files. I think it sounds GREAT, even at it's narrowest bandwidth!

The reference implementation includes an FDM-DV softmodem optimized for use with Codec2. Remember that a codec converts one digital

stream to another digital stream; it must be modulated on an analog signal to be transmitted over the air. The FDMDV modem works with your sound card, much like PSK31 or SSTV, and is optimized for HF. The FDMDV modem may also be used with VHF+ FM radios, although an optimized GMSK modem is planned for such operation.

Not only is Codec2 free, but David has managed to produce a codec of truly superlative technical quality. On HF, Codec2 bandwidth is as narrow as 1.1kHz; HALF of SSB! On VHF+, 3kHz channels should be easily attained, with 2kHz channels possible depending on radio quality. That's ½ to ¼ the bandwidth of other popular codecs such as AMBE. Power efficiency is easily

GREEN MOUNTAIN GET-AWAY COMMUNICATIONS

Mitch W1SJ

AMATEUR OPERATORS IN NORTHERN Vermont provided communications for the 2012 Multiple Sclerosis Green Mountain Getaway on the weekend of August 11–12. Some 160 bicyclists rode 45, 75, or 100 miles each day in return for receiving donations for MS. The ham operators provided communications to checkpoints and to SAG vehicles along the course. The sheer length of the course made for some logistical problems for the communications. The Saturday course ran down along the lake all the way to Crown Point. The Whiteface and Bolton repeaters provided reliable coverage along this route. However, the inland Sunday route was very difficult, both for riders and communications due to the steep valleys. Quite a bit of path analysis was done prior to the event and we ended up on the Burlington VHF repeater and Monkton UHF repeater, with Bolton filling in some of the holes. We know that we had some dead spots between Buells Gore and Bristol, but the cyclists were smart and elected to not break down in that area! Coverage on the rest of the course was reliable.

Communicators included members of several radio clubs in Vermont (RANV, BARC, GMWS) along with 5 or 6 hams from other areas who provide communications for many of the MS events. Thanks to RANV members K1WAL, K1ZK, KB1WXM, N1LXI, N1ZBH, and W1SJ for putting in long days to provide support for the riders.



double that of existing codecs, and hence range is substantially improved. Sound quality is excellent for a voice codec. Depending on the modem used with the codec, amplifiers may be non-linear, hence cheaper and more efficient.

Because Codec2 is a free and open specification, it is not an “unspecified digital code under FCC rule 97.309(b)”, and may be legally used for international communications. Contrast

Continued

Codec2 cont.

this with the situation in France, which has completely banned D-STAR due to the closed nature of AMBE.

On July 24 the ARRL announced David Rowe as the recipient of the 2012 ARRL Technical Innovation Award for his work on Codec2. The Board noted that Rowe "has been a major leader and the primary technical author of an open-source CO-DEC2 protocol, designed to address the impediment to the development of amateur digital voice posed by closed-source protocols."

Codec2 and FDMDV are currently usable, but are in an "alpha" stage. Development and testing are well underway, including on the air testing. There's no GUI yet, just a collection of command line utilities and libraries, so that's a bit of a hurdle for less technical folks. I hope we soon start to see Codec2 support in the popular PC

SDR apps, and DSP radios like the K3 should be able to support it with a firmware upgrade. I for one am looking forward to trying Codec2 on the air, and I'll be sure to report my findings when I do.

For more information:

codec2.org/

www.rowetel.com/blog/?page_id=452

en.wikipedia.org/wiki/Codec2

www.arrl.org/news/arrl-board-of-directors-names-award-recipients-at-2012-second-meeting

* If you were at HAMCON a few years ago you may have caught me heckling the presenter about AMBE during the D-STAR presentation. D-STAR takes a lot of heat. Yes, the codec situation is unacceptable. It's also pretty lame that Icom trademarked it even though JARL invented it. And the rigs are too expensive. That said, I have reviewed the D-STAR specification, and aside from those

issues, I think it's actually a pretty good system. If the issues can be surmounted, then I would be happy to see D-STAR with Codec2 become widely adopted by the ham community.

VE Exams

Every 2nd Friday
6:30–8:00^{PM}

29 Mansfield Ave. • Burlington

Tech, General, Extra class licenses.
Bring 2 forms of identification, copies of existing license and CSCE (if applicable), pens and pencils, and the exam fee (\$15—exact amount only please).

Directions:
barcvt.net/directionsarc.html
CARL AB1DD@arrl.net



RANV

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South Burlington, VT 05407

NEWS & VIEWS

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INSIDE

- Codec2
- MS Race Communications

Upcoming, Notices, & Other Misc

- RANV: Oct Meeting—10/9
- NEAR-Fest 10/12 & 13, www.near-fest.com/
- NFMRA: Annual Mtng, 10/13; Red Cross Bldg, Rutland; 1–3pm (the 440 linked system)
- 2012 ARRL S.E.T.—TBD (early Nov)
- Steering Wheel: 3rd Tues, 6:30–8:30; Ninety-Nine Restaurant, Taft Corners
- Dues due? Pay online at www.ranv.org/ranvpay.html
- VT Ham Radio Calendar www.vthrc.net

NEXT MEETING

TUESDAY • SEPTEMBER 11 • 7:00^{PM}

O'Brien Civic Center • Patchen Rd

South Burlington

"WRTC"

www.RANV.org