

# DIGITALLY SPEAKING

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## P25 Networking – Staying Digital

Before I get into the “meat and potatoes” of this month’s exciting column, those of you who have been “sitting on the fence” about getting a Yaesu DR-1X repeater for your club at the special price of \$500 should stop procrastinating. A few weeks ago, Yaesu issued a “last call” notice. The powers that be have decided to terminate the very successful, long-running program. Thus, orders placed in 2016 will presumably be priced at or near the previous levels. If memory serves, this was a street price of \$1,700 before the direct discount program began. So, if you want to take advantage of the savings, you’d better act now.

As I’ve noted many times, the world of digital voice is constantly changing and evolving, leading to new advances in capabilities and ease of use. Some of these emanate from commercial manufacturers or software developers. Others come directly from members of the amateur radio community.

A few months ago, I expressed a desire for a way to network P25 repeaters in a scheme that kept everything in the digital domain – instead of utilizing some interim analog step. As I enjoy reading – as well as writing – and keep my eyes open to new things, I subsequently ran across an item that grabbed my attention.

It seems that there is indeed, a working solution to connecting Motorola Quantars (the most popular repeater option) with easily and inexpensively obtainable hardware and some unique software. To me, this was an exciting discovery. David Krauss NX4Y has developed software and created the Quantar Connect Network - allowing appropriately configured repeaters to network via his server. The repeater needs to have the V.24 option installed – or a homebrew version – and be coupled with a suitable Cisco router.

The “tried and true” configurations currently use older EOL (end of life) 2600XM and 3700-series routers. Others may be workable, but for the easiest implementation, I’d suggest going with what David has specified. Besides, these are usually available for \$50 or less, so why be a rebel? To be sure, a good knowledge of networking and router setup is going to come in handy. However, it’s the rare radio club that doesn’t have at least one IT professional as a member. This opportunity for a team effort with RF and IT backgrounds should yield some very positive rewards.

The network has been operational for about a year, with several repeaters on-line in the States (including Hawai’i). If you like to talk internationally, then you should enjoy chat-



*Motorola Quantar repeaters can now be affordable and easily networked for amateur radio use, thanks to the efforts of David Krauss NX4Y. (Courtesy of QRZ Now)*

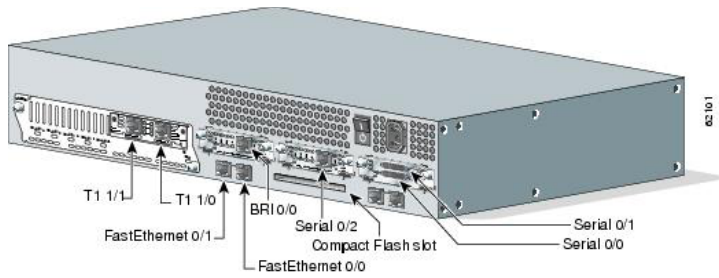
ting with P25-capable hams in Australia, Austria, Germany and New Zealand. I’m sure more countries will be appearing on-line as word gets out.

The network also encourages the use of talk groups, normally a term we associate more with DMR. Yes, P25 supports talk groups. It’s just that without networking, they aren’t of much interest. Even with a “faceless” Astro Saber like mine, different channels can be programmed for different talk groups – so no keypad is necessary to join in on the fun.

Repeater book ([www.repeaterbook.com](http://www.repeaterbook.com)) reports that there are currently 176 P25 repeaters in North America, with 192 listed worldwide. I suspect those numbers are under-reported (their data is only as good as what is submitted to them), even so, that still represents a significant population. As more and more P25 repeater owners become aware of the Quantar Connect Network (you can do your part to let them know) and join up, it should surely make having a P25 radio more interesting.

As I’ve been readily able to pick gently-used up P25 portables for less than a gently-used D-STAR portable, having the ability to talk over great distances as I can with D-STAR is attractive for those looking to get involved with digital voice, but are hampered by budgetary constraints. For repeater owners wanting to get more P25 activity going in their respective areas, networking the machines seems like a real win-win to me.

More information on the Network and the efforts of NX4Y can be found at the following web sites: <http://communications.support/threads/7509-Quantar-Site->



*Above: Used Cisco 2600XM's are inexpensive and easy to find. Your favorite IT pal may have some sitting on a shelf, collecting dust. (Courtesy: Cisco) Right: If you cross a Kenwood TH-D72A and TH-F6A, then mix in D-STAR, what would it look like? We may find soon find out. (Courtesy: Kenwood USA)*



**Connect-up-and-running and <http://communications.support/threads/4798-IP-link-Quantar-V-24-systems-using-Cisco-routers>.**

Feedback from the November Buyers' Guide has some readers asking me what to buy as a "good" first radio – one that won't be or feel "obsolete" in a short time. If you follow my lead, then you're going to want something with digital capabilities, not merely analog.

That brings up the question of what digital methodology should a new ham embrace first. The answer depends on several things, not the least of which is what sort of infrastructure is available in your local area. If there are only System Fusion repeaters and/or WIRES-X networking is available, then the path of least resistance is going to lead you toward Yaesu's product offerings.

If D-STAR is firmly embedded in your area, then something from ICOM would be the most prudent answer. If such repeaters are close, a portable will work fine. However, if the "local" digital repeater isn't all that "local," then a mobile may be best for your first rig. That philosophy applies to most applications.

What if you are one of the more fortunate new hams and your area is flush with the previous methodologies, plus DMR or even others? Then what do you base your decision on? The best advice I can give is to attend some local radio club meetings. Joining one or two is also a good idea. In fact, one of the best things a new ham can do is learn from the experiences of others. Joining and actively participating in a radio club helps you become part of the community that is amateur radio.

When it comes to digital, take a look at what many have adopted and the uses they are putting them to. Perhaps D-STAR is more the domain of EMCOMM minded hams, given the more mature nature of D-STAR and readily available applications for moving non-voice data. Alternately, DMR might be of more interest to those with some experimental leanings. While some hams will have adopted only one format, more will probably overlap and own gear for several.

Making the waters perhaps a bit murkier is the fact that options are emerging that will allow a Yaesu DR-1X repeater to support D-STAR, in addition to its native modes of operation. That means that you can have something of a tri-mode repeater for under \$700 – although that figure will soon change (refer back to the top of the column). Sometimes it even comes down to how friendly the folks are that have adopted one methodology or the other. While there isn't always one clear-cut answer, hopefully this will be of some guidance. In the long run, you'll probably end up with more than one. The limits are usually more financial, than technical.

One more consideration that often drives your decision might be the availability of used equipment. A D-STAR enthusiast may have started with an IC-2820A, but now wants to upgrade to an ID-5100A. An owner of an FT1DR portable may be offering it for a very reasonable price, as she wants to upgrade to an FT2DR - and so on. Here too, such deals are best discovered within a club and having regular connections to the people selling their used gear.

I'm not normally one to further rumors, but there is a "very interesting" one going around. By the time you read this, we should know if it was just a fabrication or not. The word is that Kenwood will be introducing a new tri-band (144/220/440) portable that fits in somewhere between the TH-F6A and TH-72A. (TH-D62A or TH-D80A, perhaps?) One of the promises that have many excited about this radio is that it is supposed to support analog FM, APRS with internal GPS and (wait for it) D-STAR. Yes, Virginia, D-STAR.

Some may remember seeing a picture of a Kenwood-badged version of an ICOM ID-800 from many years ago. This seemed to be more of a way to satisfy the JARL rule that at least two manufacturers had to be offering D-STAR gear for the concept to be accepted. While a few pictures exist, I've never met anyone who actually saw the radio "in the flesh."

If the new portable becomes a reality, then this is exciting news. One of the downsides of the current offering of D-STAR rigs is a lack of an embedded APRS feature set

(like Yaesu's System Fusion rigs have). APRS information is available through certain applications and something known as D-PRS. This provides much the same information, but it isn't exactly APRS and doesn't exchange data directly with other APRS stations. Such a radio from Kenwood (known for excellent APRS support in their TH-D72A) would bring them into the DV amateur radio market with a "compelling" product – especially for the EMCOMM (AUXCOMM/ARES/RACES/SKYWARN) crowd.

The added feature of 220 MHz operation would finally bring D-STAR (or any mainstream digital voice operation for that matter) to the band. As I wrote a few months ago, many of the "puzzle pieces" are already there – it's just a matter of someone stepping up to produce self-contained transceivers. If Kenwood does this, then it would finally bring digital voice to a very useful piece of spectrum. If they create a hybrid with all the features of the current two radios and state of the art D-STAR functionality – they'll have the radio equivalent of a "killer app."

Bridgecomm already produces the BCR-220 repeater and the addition of a readily available GMSK board could provide users with a network-able (reflector-able?) resource for a very reasonable price. Tri-band mobile and base antennas already exist. If Kenwood sees enough success with the new portable, then they may be further encouraged to market a companion mobile, as well. Perhaps MFJ would be enticed to produce a tri-band version of the Mirage BD-35. See how fast this could all spool up?

The addition of a laptop, netbook or tablet for use as an intelligent terminal, would make this a "must have" for many Go Kits. Imagine being able to support APRS, D-RATS and other non-voice data applications, with just two small pieces of equipment. For some, this – and a few cables – could make up the entire Go Kit, with plenty of room left over for a "serious" external battery.

I currently own four D-STAR portables and two mobiles. I have three APRS-capable stations. Even with all that, I'd welcome Kenwood's entry into the DV market with open arms and would feel compelled to add this new portable to my stable of digital voice radios and APRS setups (anyone want to buy a used 220-only rig?).

Coming back to earth for a moment, it all depends on whether this is just wishful thinking on someone's part or a real product coming down the pipe. Allegedly, there is supposed to be a formal announcement by Thanksgiving (in the US) – with product availability in time for the 2016 Dayton Hamvention in April. Thus, you should know, one way or the other, by the time you read this. As for me, I'm keeping my fingers crossed and eying my collection of spare change.

I started this month with news from Yaesu, spent some time dreaming with Kenwood and will now end with ICOM. The company is releasing yet another set of 50th Anniversary versions of the ID-51A/E Plus, dual-band portable. This time, your color selections are Classic Black, (with a gold stripe) Sunset Orange, Passion Pink, Ultraviolet and Lime Yellow. With the new batch, a matching color case is includ-



*ICOM is issuing another 50th Anniversary limited release of the popular ID-51A/E Plus portables in new colors. Collect 'em all! (Courtesy: Icom America)*

ed (still no "black and gold" for us Pittsburgh Steelers fans, but I keep hoping).

Along with the new colors, you get the latest firmware and repeater database – already in the radio. The first limited set sold well and I expect these (also limited to 5,000) will, too.

I've been setting up a new office for my business lately, traveling between South Jersey and Western Pennsylvania. As I typically keep a D-STAR transceiver running in my office(s), you may be able to catch me on REF020B or REF063C – depending on where I am at the time. As always, I encourage feedback and topic suggestions via email.

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