Asterisk, Allstar, and Hamshack Hotline Background

Like everything, telephony has gone from analog to digital over the last couple decades. What once required tens of thousands of dollars of specialized hardware and pricy specialists can now be done on the cheap. A $35 Raspberry Pi computer can handle systems with hundreds extensions and dozens of simultaneous calls. When the transition to digital began it was a few companies developing their own proprietary systems but as so often happened an open source competitor emerged, Asterisk.

Asterisk is an incredibly powerful open source PBX program. It has a huge and dedicated user base. It occurred to someone that a PBX is not that different than a repeater controller, and Asterisk would make a powerful base for developing a new kind of controller. The result was a program called app_rpt, a plug-in module for Asterisk that handles those things that are different between telephone and ham use, like callsign IDs, PTT, and timeouts.

This isn't new technology. Asterisk began in 1999, and app_rpt around 2006. In ham radio circles that was still a late start, IRLP and EchoLink were already popular, and Asterisk based controllers were mostly used to create individual linked systems. Gradually more of the systems would link together, and AllStarLink was created in 2011 to formalize the interconnection. After that Hamshack Hotline began, a large network of pbxs using Asterisk, to create a way to link phones and the Allstar RF network together. As a system, this works quite seamlessly. There is a learning curve, but it is more than worth it for the power and flexibility it offers.

On the RF side, digital voice has been in use on ham radio since the 90s. Its adoption was hampered from the start by multiple competing incompatible standards. DMR, D*Star, Yaesu System Fusion, P25, NXDN, and others all have their proponents. What tended to happen is a few people in an area started using one and attracted others to that mode, creating pockets of users that could not speak to each other. In recent years this Tower of Babel has been become less of a problem due to gateways and hotspots. Gateways are servers that interconnect two or more networks together. Hotspots are small low power radio + computer devices that produce a local signal for you to access your radio and connect it to the internet side of these different digital voice networks. Some hotspots have limited gateway capability, so you could use a D*Star radio to access the Yaesu network for example. With hotspots a user is no longer bound to whatever mode local users have supported with repeaters. If you have an internet connection you can use your radio on any of the networks.

Some gateways are simple and just have two sides. For example, K4HG has a gateway between Allstar and the county DMR talkgroup, and K1ST has one that links Allstar with the county FM repeaters. By linking these together the county DMR and FM networks become one as we do for the weekly net.

Other gateways create huge networks that link many systems across many modes together. Often these host a series of nets that serve as a gathering spot for special interests.

This can be a complex subject. If you like delving into complex systems and learning how to bend them to your will you will love it. If you like simpler things that just work the Steves are happy to advise and mentor you if you want to test the waters.

One final word. A common complaint against any internet connected ham system is it will be worthless in a disaster. Recent hurricanes have taught us that internet may be fragile, but it is getting more disaster resistant as it's importance to society has grown, and when it does go down it often is brought back quickly. This will be even more true when Starlink, the satellite internet system becomes widespread. More and more ham radio is being called upon not to

replace entire communication systems but to fill specific holes caused by a disaster. Digital voice is an incredibly powerful tool set that could be very useful in some emergencies, and it pays to understand it at least well enough to use it.