Reflectors

Often terms come in to common use without being well explained. People who were not directly involved with a technology during its inception may not ever hear a good explanation of what the terms mean are how the things they represent are used. Then that lack of knowledge becomes a barrier to new people getting involved with a technology in which they may otherwise be interested.

The term "Reflector" is one such term. Those of us who have been involved with computers and email understand that an email Reflector is just a computer system which receives email and the sends out copies of that email to, in some cases, many thousands of individual email recipients. The Atlanta Radio Club uses such an email reflector for getting announcements and notices to our membership. Anyone can go to http://groups.yahoo.com and signup to receive these emails.

In recent years, the same concept has been used with repeater systems. The Atlanta Radio Club's main FM repeater is able to connect to other repeaters using the IRLP system. The Internet Repeater Linking Project is a system that takes the audio from a repeater and sends it across the Internet to another repeater where it is then transmitted. Thus, the two repeaters are "linked" and hams using two different repeaters in two different cities are able to communicate as if they were both using the same repeater.

That turned out to be very useful, but it didn't take long for hams to want more. Why not hook several repeaters together in a sort of conference call? Well that can work for a small number of connections, but soon it will require more network bandwidth than is available in most Internet circuits available to repeater systems. A good sounding stream of audio sent over the Internet takes about 56K (56 thousand bits per second) of bandwidth. If each repeater has to send the audio to 3 other repeaters, that's 168K. Some circuits are limited to 128K (upload); most DSL circuits are in the neighborhood of 300K. Since repeaters are often in remote locations, the circuit choices can be limited and expensive. Clearly another solution was needed.

Then somebody got the idea of putting a computer on a high capacity network somewhere so it could receive an audio stream from a single repeater and "reflect" it out to many repeaters. Voila, we have the first reflector. It turned out to be easy to set up. A reflector is not nearly as complex as a repeater. All it has to do is listen to an incoming stream and then copy the bits out to other repeaters exactly as they came in. No other processing necessary. It can generally use the software that was written for the repeaters with only very minor changes.

IRLP assigns a node number to repeaters and does exactly the same thing to reflectors. So, if you connect repeater node 1027 to reflector node 2034 and somebody in another city connects repeater node 1934 to the same reflector node 2034, the audio from your repeater goes to the reflector and then is immediately send to the other repeater. Repeat this process with 10 other repeaters and your audio goes out through 12 different repeaters.

This works great with IRLP, but there's more. Add D-Star to the picture and things really get hopping. D-Star linking is like IRLP on steroids. There are some differences in the systems and they are not compatible. But almost every D-Star repeater system is already on the Internet. Add to that the fact that there is a common way of linking that works with every D-Star repeater, a whole series of other digital tools already in place and a community of people anxious to learn about and use the capabilities and you've got a really powerful system.

Most Georgia D-Star repeaters are now often left connected to Georgia's own reflector (REF030). That means that you can start a conversation with somebody in Savannah as you start your commute in Lawrenceville and continue the conversation as you travel to downtown and then up to Chattanooga. You may have to change repeaters, and if the next repeater is not connected to the reflector, you may have to do a simple command to connect it, but it works great.

Another use for reflectors is wide area nets. The Sunday night (9 PM ET) Southeastern D-Star Weather Net is a good example. This net links repeaters in Georgia, North Carolina, South Carolina, Florida, Alabama, Tennessee, Mississippi, Louisiana and Texas. There are often 40 repeaters and 75 check-ins. You could not handle this many people in a reasonable length of time without the "Quick-Key" feature of D-Star. When each state is called, the hams in that state check-in simply by keying their microphone with no audio. Because D-Star transmits the call sign digitally, the net control station sees a list of call signs on his computer screen. Then, as appropriate, he can call stations for traffic. If you have D-Star capability, I think you'll find it interesting to listen and watch this net in action.

Reflectors are a vital part of D-Star and are useful on IRLP and even on Echolink. I hope this explanation has been useful to you.

As always, direct questions, comments and suggestions to KE4FOV@Bruner.us.