

A Beginner's Look at EchoLink

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What's in This Paper Anyway?

This paper is a brief introduction to EchoLink. It explains what it is and presents a layman's overview of how it works. There's a lot of detailed information on the internet. This paper is intended to help you sound like you know what you're talking about at your next club meeting. If you really want to understand EchoLink then toss this paper and Google: EchoLink where you can get some *useful* information.

What is Echo Link?

EchoLink enables hams to connect to one another over the internet using Voice Over Internet Protocol (VoIP). In its simplest configuration you connect your computer to the internet and run an EchoLink software program. Your destination, selected from a list in the software, can be any of several thousand other EchoLink users in over 100 countries of the world. With the computer's built-in microphone and speakers or a headset you can talk with other EchoLink users. (An iPhone with an EchoLink App can be used in place of a computer.) Where it gets interesting is how people on the other end can talk to you. Depending on what type of station you connect to they can be talking over an RF link via an HT or base station to their local repeater.

Here's an example: you have a ham friend on the East Coast who wants to talk to you. She does not have a 2-meter transceiver but does have a computer with an internet connection. She decides to give you a call so she runs her EchoLink software and selects KC5OUR-R from the list of active EchoLink stations in the US Area region 5. In a few seconds she's connected to the KC5OUR-R node in Belen. You're out doing errands and hear her call you "K5XXX this is K2YYY over." You respond as you normally would answer a call from any other station on the local repeater and have your QSO.

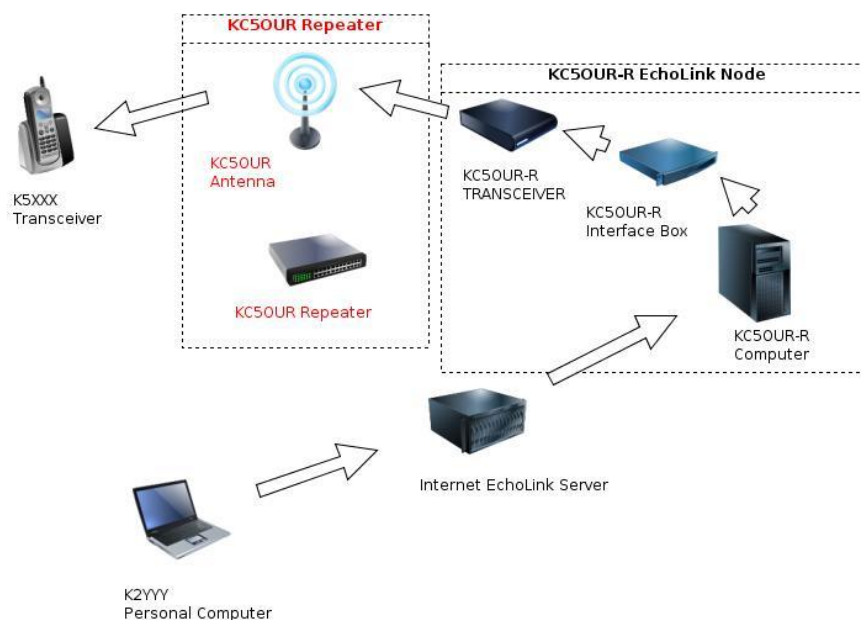


Diagram of EchoLink Single-User to Sysop Example

So what just happened? Well, first let's define a couple of things. The KC5OUR-R node is an active EchoLink station consisting of a transceiver connected via computer to the internet. This is not the KC5OUR repeater. It is a separate station located within range of the KC5OUR repeater. A special interface box connects the transceiver to your computer — more about this in a minute.

Her signal was sent by her computer in VoIP format over the internet to the KC5OUR-R node. Remember, the node is the special transceiver-interface-computer EchoLink station, not the repeater. The KC5OUR node's computer decoded the VoIP signal and passed it to the transceiver which sent it as RF to the KC5OUR repeater where you heard it on your transceiver.

When you transmitted your RF signal was received by the KC5OUR repeater which re-transmitted the signal. The KC5OUR-R EchoLink node transceiver received your signal from the repeater and fed the audio to the computer which converted it to VoIP and sent it out over the internet to your friend's computer. So you were talking on your transceiver to the local repeater and she was talking on her computer. She was operating in what EchoLink calls Single-User mode and the KC5OUR-R node was operating in Sysop mode.

In this example we saw how a ham with only a computer and EchoLink software was able to speak with someone who was within range of their local repeater. But you can also initiate a connection to a node anywhere in the world from a transceiver, instead of a computer, using your local repeater, if there is an EchoLink node within range of that repeater. Think of the example as a computer-to-RF link. This alternate method would be an RF-to-internet-to-RF link. And yes, you can even do an RF-to-internet-to-computer link if that computer is an active EchoLink Single-User node. Confused yet?

Could you use EchoLink to converse from computer to computer? Yes, but why would you want to? You might just as easily use a VoIP phone to do that. There are additional ways you can connect to EchoLink such as using simplex instead of a repeater.

Is EchoLink a digital mode? No. It's considered an RF FM mode where the only digital portion occurs over the internet.

Does it work only on 2-meters? No. An EchoLink node may be VHF or UHF working into a nearby repeater or even in simplex mode to a nearby transceiver.

So what's with the -R at the end of the callsign? The R indicates repeater and means that the node is operating into a local repeater. An L indicates link and means you are using simplex (direct from a transceiver to an EchoLink node), rather than a repeater. These suffixes are set up at the time you register your callsign with the EchoLink folks.

Why would I be Interested in EchoLink?

The best reason I can think of is to have some fun and learn about it. It costs nothing if you use the Single-User mode. It costs very little if you set up your own Sysop station. The EchoLink software is free but the transceiver-computer interface runs around \$90, or you could build your own. It's basically a sound card with level controls. Popular off-the-shelf models include the

Signalink USB or RigBlaster Pro. You can also use EchoLink to communicate with people in far-off places on the globe but that's just an added bonus as far as I'm concerned.

How Can I Use EchoLink?

You can use EchoLink in a variety of ways, several of which were discussed at the beginning of this paper. But you must first be validated and authenticated to use EchoLink. In other words the founders of EchoLink decided it would be better to qualify hams before they use the system, to keep hackers and CB-types off the system.

Validating and Authenticating Your Callsign

The process is a bit complicated so it's best to visit the www.echolink.org website and follow the validation and authentication process explained there. Certified VE's can streamline the process by submitting proof of active VE status.

Do Try This At Home

Ok, so assume I haven't completely scared you off — yet. Here's what you can do to get into EchoLink. All you need is a computer connected to the Internet and EchoLink software.

Go to the www.echolink.com website and download the EchoLink software program and follow the instructions. You will need to validate and authenticate your callsign before you can use the software. If you're planning to only use EchoLink from your computer you probably need only register for Single-User mode, so you won't append either an L or an R to your registered callsign.

Once you have all this in place you can run the EchoLink program and try connecting to the KC5OUR-R node. With a 2-meter transceiver nearby to monitor the KC5OUR repeater you should be able to connect to KC5OUR-R and hear yourself on the repeater. Watch out for the feedback from your transceiver's speaker to your computer's microphone. By now you'll probably have raised the notice of all the hams in the Rio Grande valley and possibly the ire of the repeater chairperson. Whatever you do, do not, *I repeat*, do not tell them I put you up to this.

Then what? Well, develop some ham friends somewhere outside of the US who are interested in EchoLink and do some DX work on 2-meters.

Is EchoLink Really Ham Radio?

That's a good question. Next question please.

What are EchoLink Commands?

Recall that if you are using a computer to initiate a QSO you run the EchoLink software, select a station and initiate the call. But if you are *initiating* a QSO from a DTMF-capable transceiver (the opposite direction in the diagram on page 1), you need to initiate the call with DTMF tone codes to establish a link. The codes are EchoLink commands. They're a bit complicated to use but they're explained in Appendix I below. (After studying the examples you'll quickly realize why they invented cell phones.) A complete list of commands is available at www.echolink.org.

EchoLink Resources

The primary EchoLink resource is www.echoLink.com

An interesting site to look at is www.voipwx.net/

Appendix I

EchoLink Commands for the KC5OUR Repeater

Command	Code You Enter	Meaning
Connect	<i>Node Number</i>	Connects to a station on the Internet, based on its node number.
Connect by Call	C + call + #	Connects to a station on the Internet, based on its callsign.
Disconnect	#	Disconnects the station that is currently connected. If more than one station is connected, disconnects only the most-recently-connected station.
Disconnect All	##	Disconnects all stations if you're in a Conference QSO
Reconnect	09	Re-connects to the station that most recently disconnected.
Status	08	Announces the callsign of each station currently connected.
Link Down		Disables EchoLink (no connections can be established).
Link Up		Enables EchoLink.
Play Info	*	Plays a brief ID message.
Query by Call	07 + call + #	Looks up a station by its callsign, and reads back its node number and status.
Query by Node	06 + num	Looks up a station by its node number (<i>num</i>), and reads back its callsign and status.

Shortcuts

Custom DTMF commands can be created to connect to specific stations. These commands are called Station Shortcuts, and are not shown in the table above. To manage your Station Shortcuts, click the Station Shortcuts button on the DTMF tab of Sysop Settings.

Entering Node Numbers

To enter a node number (for the Connect or Query by Node commands), enter the 4-, 5-, or 6-digit node number. If the specified node is not among the stations currently logged on, EchoLink will say "NOT FOUND".

Entering Callsigns

To enter a callsign (for the Connect by Call or Query by Call commands), press two digits for each letter and number in the callsign. The first digit is the key on which the letter appears (using 1 for Q and Z), and the second digit is 1, 2, or 3, to indicate which letter is being entered. To enter a digit, press the digit followed by 0. When finished, end with the pound key (#).

For example, the letter "K" is entered as "52", the letter "Q" is entered as "11", and the digit "7" is entered as "70".

Callsigns need not be entered in full. If a partial callsign is entered, EchoLink will find the first match among the stations currently logged on. If no match is found among the stations currently logged on, EchoLink will say "NOT FOUND".

Examples

(These examples assume that the default DTMF codes are configured.)

To connect to node number 9999:

Enter: **9 9 9 9**

EchoLink responds with:

"CONNECTING TO CONFERENCE E-C-H-O-T-E-S-T"

followed by:

"CONNECTED"

because 9999 is the node number of conference server "*ECHOTEST*".

To get the status of K1RFD:

Enter: **0 7 5 2 1 0 7 2 3 3 3 1 #**

EchoLink responds with:

"K-1-R-F-D 1-3-6-4-4 BUSY"

because 13644 is the node number of station K1RFD, and K1RFD is currently busy.

To connect to a random link or repeater:

Enter: **0 1**

EchoLink responds with:

"CONNECTING TO K-1-O-F REPEATER"

followed by:

"CONNECTED"

because K1OF-R was selected at random.

Credits: my thanks to Richard Ybarra AB1Q, for his table of EchoLink commands and examples and for technical proof-reading.

About The Author

Cliff holds a degree in Electrical Engineering. During the cold war he worked for the AEC on fast breeder nuclear reactors in Idaho and for the DOD at a Naval Security Group Activity site in Winter Harbor, ME. For 23-years he worked at Hewlett-Packard Co as a technical writer, software engineer and Division IT manager. Cliff was first licensed as Wn1LPE at age 12 in the 1950s in Concord, MA. He currently holds an Extra Class license as KE0CP and enjoys working DX and occasional CW contacts when he's not otherwise engaged as the VCARA newsletter editor and club president. Cliff and his wife Margette, also an Extra (KF5MIQ), are retired in New Mexico.