TALK AROUND THE WORLD FROM YOUR CAR, BACKYARD OR SHACK
THE WELLINGTON RADIO CLUB ECHOIRLP PRIMER
ON USING THE INTERNET RADIO LINKING PROJECT & ECHOLINK

Using the WRC's Echo-IRLP open repeater is no more difficult than using your cellphone. It may even be easier! After reading this Primer, you should have no problems contacting over 4000 repeater sites and 10,000's hams worldwide via radio or their computers.

For many, it's easier to visualize Echo-IRLP as a phonepatch that uses your radio and the Internet. It's often referrred to as a "GATEWAY". Instead of dialing a telephone's country code, area code and 7 digit number, just dial a four digit IRLP location code or an asterisk * plus the Echolink code to contact a distant location.

That code is called a *NODE NUMBER OR ID*. A node can be a distant repeater, simplex radio, a remote computer or a kind of digitized repeater. The digitized repeater node is called a *reflector* or *conference*. They permit many radio nodes to connect to one another, like a "partyline", but only one can speak at a time. Node IDs and locations are listed on the Internet at: *www.irlp.net* and *www.echolink.org*

IS YOUR SIGNAL NOISY OR POORLY MODULATED?

One of the joys of using IRLP or Echolink is that most contacts are telephone quality and encourage good conversation. Obviously, signals with low audio or that are very noisy make conversations difficult and reflect poorly on your station as well as the Wellington Radio Club. It's easy to check the quality of your signal using the remote digital recorder feature, referred to as the "ECHO" mode. Page two of this Primer has step-by-step instructions on this test mode.

INITIATING & ENDING A DIRECT NODE TO NODE CALL

Once you know the node number you want to reach, first listen for at least 10 seconds before transmitting. Then ask if the repeater is currently in use. Assuming all is clear, identify yourself and give the node name or number you wish to call. Example: *"K4WRC entering tones for the Sydney node"* - - then enter the node number and release your Push-to-Talk button (PTT). Our repeater should come up with a carrier as it waits for the connection to be authenticated. This can take a few seconds of dead-air, so don't be concerned. When the connection is confirmed, the voice ID of the destination node will be transmitted back to you. At the same time our node's voice ID message is broadcast to the distant node.

If our node is already connected to another node a message will play saying: *"your node is currently connected to...."*. In this case, ask if anyone desires the connection to remain up. If not, disconnect by pressing **73** on the DTMF keys.

You may also hear an error message that could mean the node you tried to reach may be offline. If the dialed node is busy, you may hear the message "the node you tried to reach is in local use".

ONCE CONNECTED

After hearing the confirming voice ID, wait at least 10 seconds before transmitting. Here's why:

-The destination repeater may be in use, and your entry may have occurred between transmissions.

-Also, it may be that the voice ID of our node is longer than the voice ID of their node, and the connection is not made until the ID is fully played.

-Or their computer may be slower, and hence take longer to process the connection than ours.

EVEN IF YOU MADE A DIALING ERROR... NEVER DISCONNECT WITHOUT FIRST IDENTIFYING... courtesy demands an ID!!!

ALWAYS OPERATE IN THE SPIRIT OF THE AMATEURS CODE

After checking for activity for ten seconds, press and hold the microphone PTT for a *FULL SECOND* and then announce your presence and your intention... such as a specific callsign or a CQ looking for a specific location: *"CQ any Sydney area station, CQ from K4WRC, Kilo-4-Whiskey-Romeo-Charlie on Echo-IRLP ...Over"*

If no response is heard, announce your call and your intent to drop the link: *"K4WRC disconnecting unless called"*. LISTEN and then enter the OFF code, *73*. *It's not good practice to transmit touch-tone commands without first IDing. Not only is this courteous, it is a regulatory issue in some countries connected to reflectors.*
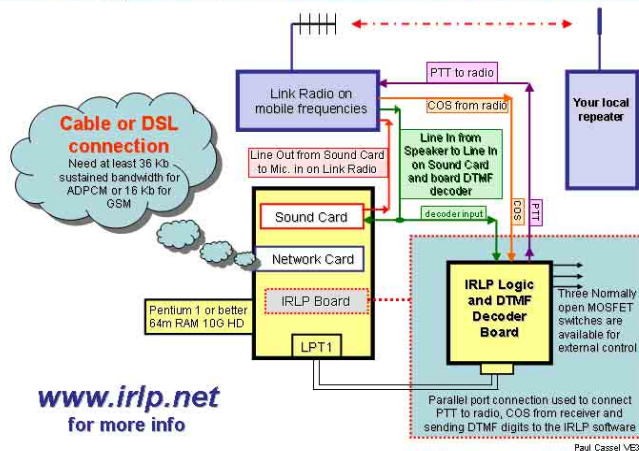
Some nodes are configured so you cannot connect to them if its repeater is active such as during a net or local QSOs. In this case you may receive the message *"The node you are calling is being used locally."* If you receive this message wait a few minutes and try again. If you stay connected to a node and there is no activity on your repeater for 4 minutes, the connection will time out and automatically disconnect with a voice ID disconnect message on both nodes.

ANSWERING A CALL INTO WELLINGTON

Simply wait until our repeater carrier drops, press your PTT and count to 3 before answering. This makes sure your first syllables are not lost.

If you are already connected to a node and a call comes in from another node, there will be a "callwaiting" message played and the caller's node ID will be stored in our computer. After you disconnect from the current call, use the utility code 269 to return the call automatically. (See the code list below).

INITIATING AN IRLP REFLECTOR OR ECHOLINK CONFERENCE CALL

This is usually the same as node-to node calls. *THE USER IS RESPONSIBLE FOR CLOSING ANY NODE THEY HAVE CONNECTED TO!* During a period of abuse, the reflector mode may be off. Ask a Control Operator to turn on this mode with special codes.

A Typical IRLP Node on 220 or 440 MHz

PTT to radio
Link Radio on mobile frequencies
COS from radio
Your local repeater
Line In from Speaker to Line in on Sound Card and board DTMF decoder

Cable or DSL connection
Need at least 36 Kb sustained bandwidth for ADPCM or 16 Kb for GSM

Line Out from Sound Card to Mic. in on Link Radio
decoder input
COS
PTT

Sound Card
Network Card
Pentium 1 or better 64m RAM 10G HD
IRLP Board
LPT1

IRLP Logic and DTMF Decoder Board

Three Normally open MOSFET switches are available for external control

www.irlp.net
for more info

Parallel port connection used to connect PTT to radio, COS from receiver and sending DTMF digits to the IRLP software

Paul Cassel VE3SY

USER UTILITY CODES

Jerry N3HVC does a great job of creating routines on our node computer that make using the repeater a pleasure. You'll find the following list of DTMF utility codes useful... PRINT THEM. The codes or tones are entered by pressing the DTMF keys/buttons on the front of your radio, or on your mic, depending on the radio model.

If you follow the good operating practices described in this Primer,
you are welcome to use the K4WRC repeater and nodes.
They are "OPEN"... Wellington Radio Club membership is not required.

CONNECTING & DISCONNECTING FROM INTERNET SYSTEMS

IRLP: Connect by entering the 4 digit node number
ECHOLINK: Preface multidigit node number with an *
DISCONNECT: from either system with "73"

THOSE ARE PRETTY UNIVERSAL CODES. HOWEVER, THEY MAY NOT WORK ON MANY NODES THAT ARE "CLOSED" FOR OUTGOING CONNECTIONS. THEIR OWNERS HAVE SPECIAL CODES THAT ARE GIVEN TO ONLY CLUB MEMBERS OR THEIR FRIENDS.

OTHER REPEATER OPERATING CODES

169...callback the last node connected
269...callback the callwaiting node
211...playback the ID of the last node contacted
311...playback the ID of the last callwaiting node
400...play time without seconds
401...play time with seconds
402...play Universal/GMT Time
00xxxx...play time and date at node XXXX
511...call a random node
611...check if our node is clear or connected
919...Aviation Weather-Palm Beach International Airport
920...NOAA regional Weather

MOST OF THE OPERATING CODES ARE UNIQUE TO THE K4WRC REPEATER.

STEP-BY-STEP TIPS FROM JIM KJ4WYF ABOUT:
HOW TO CHECK YOUR MIC AUDIO LEVEL AND SIGNAL NOISE

IRLP has a special node known as an *echo reflector* which is set up to record and retransmit a few seconds of your signal. By connecting to the reflector at node number 9999, you may hear your signal as others do over IRLP. This is a great way to verify your modulation level, signal quality, and the clarity of your speech. The reflector is unbiased and will show you the good or the bad.

1. CONNECT TO THE REFLECTOR... *Following the protocol listed in section "INITIATING & ENDING A DIRECT NODE TO NODE CALL" (see page 1), connect to node number 9999. If successful, you will hear, "Echo Reflector Link On".*

2. SEND A TEST SIGNAL... *When connected, node 9999 is dedicated for your use, and there is no need to wait to see if others are using it. Key up by pressing the Push-to-Talk button and make a short transmission which indicates that you are testing. It is appropriate to give your call sign.*

3. LISTEN TO YOUR SIGNAL COMING BACK FROM THE REFLECTOR... *Once you release the Pust-to-Talk, listen and you will soon hear the sound of your voice being played back to you.*

4. MAKE ADJUSTMENTS (IF NEEDED)... *If you need to make a quick adjustment, do so and transmit again. Common adjustments are mic level or gain, speaking closer to or further away from the mic, transmit power, or transmit location. If you are on a hand-held radio, and you are not satisfied with your signal, try moving a few feet and retransmit. If your audio is low despite adjustments, be sure to check your radio's menu or setup to be in the WIDE mode and NOT Narrow. If you do not need to make adjustments or cannot do so quickly, disconnect from the reflector. You can always reconnect later after making adjustments.*

5. DISCONNECT... *Once you have finished testing, it is your responsibility to disconnect from the echo reflector. To do so, send dtmf tones "73". If you have successfully disconnected, you will soon hear, "Echo Reflector Link Clear". If not, try again until successful. Then identify for the last time.*