Enhanced Ham Radio

IRLP and Echolink

By Dick Illman AH6EZ
FRRL Program Chairman

Why Do I Say Enhanced?

- Do you have HF in your vehicle?
- When was the last time you had a *LONG* ragchew with a DX station?
- If you have a Technician license do you want to talk to foreign countries with just your HT?

(We hope that IRLP/Echolink makes you want to upgrade to General)

- Do you want to be able to link many dissimilar repeater or simplex coverage areas for a disaster?
- Talk long distances regardless of HF propagation?
- Are you antenna restricted?

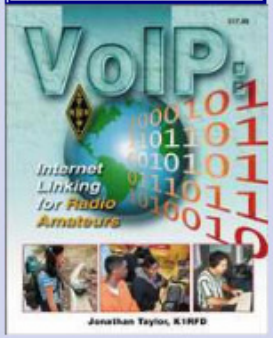
IRLP and Echolink Comparison

1. Radio-Radio ONLY	1. Radio-Radio – or Radio-Computer – or Computer-Computer
2. Linux ONLY	2. Windows or MacOSX or Linux
3. Specific Interface Board	3. Any Soundcard, PTT interface
4. Higher audio quality	4. Few audio quality standards
5. 1,617 worldwide nodes	5. Over 5,200 worldwide nodes
6. Computer admin only	6. Smartphone applications
7. Some audio streaming	
8. A few IRLP/Echolink cross links, generally discouraged	
9. Individual and reflector nodes	9. Individual computer nodes, link nodes, repeater nodes, conferences
10. No user validation – your License	10. Send a copy of your license, then download the software

EchoIRLP Nodes (both on the same node, mutually exclusive operation) are partially supported

www.irlp.net

- Home Page
- Introduction
- How it Works
- Owners FAQ
- F A Q
- Guidelines
- NODE RADIOS
- NODE INFO
- Embedded Nodes
- Order IRLP
- Update DB info
- Donations
- Email Lists
- IRLP Stories
- Related Links
- Questions??
- IRLP Net Info
- NEW Listen Live
- In The News
- Credits



Welcome to the Official Home of

I R L P

The Internet Radio Linking Project

I R LP - Keeping the Radio in Amateur Radio

EMBEDDED IRLP
Click here for a complete, low power, IRLP solution!

Google Earth BETA — CLICK for IRLP interactive node mapping

NEW - Click here if your CentOS 4 based node does not seem to work after a reboot, or provides the error AUDIO DEVICES NOT SET CORRECT.

The aim of this project is to reliably and inexpensively link amateur radio systems without the use of RF links, leased lines, or satellites.

The IRLP uses Voice-Over-IP (VoIP) custom software and hardware. Coupled with the power of the Internet, IRLP will link your repeater site or simplex station to the world in a simple and cost effective way.

IRLP operates a worldwide network of dedicated servers and nodes offering very stable worldwide voice communications between hundreds of towns and cities. All this with unsurpassed uptimes and the full dynamic range of telephone quality audio.

Click Here for a list of IRLP systems featuring live streaming audio.

IRLP En Espanol

El Reflector espanol

Enjoy IRLP and please "Pass the Word"

If left menu bar is not visible, click here

last updated March 12, 2010

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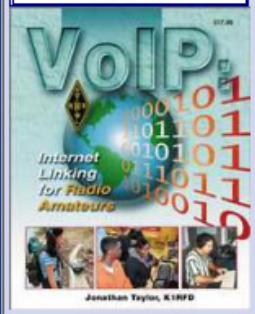

Node Information

IRLP provides a number of real-time reports and node locating tools.

I R LP - Keeping the Radio in Amateur Radio

NOTE: If you are searching for a known node and it does not appear on the status page, it is likely that node has been down for more than 5 days in which case the node is temporarily removed from the status pages.

IRLP Reports

NEW Google Earth IRLP interactive node mapping

Connected Nodes and Reflector status
the active IRLP network at a glance

Status info as a new full page window

List of nodes and Frequencies
see note below

NEW Up-To-Date Node List in **PDF** Format

Find area US Node by ZIP Code
Now using up-to-date IRLP dB info

Find nodes using Lat/Long
Find nodes within nn *miles of a Lat/Long*

Tab delimited format for PDA use (bzip2 format)
open in your browser, save as, unbzip2, and then open with your spread sheet selecting tab delimited

WAP enabled Status Page
Point your Cell, Blackberry or other wireless browser to WAP.IRLP.NET

Enjoy IRLP and please "Pass the Word"

If left menu bar is not visible, click here

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Start

IRLP Status Page as of 12/21/2011 22:53:27 UTC (12/21 15:53 MST)

Summary | Reflector Usage | Connected Nodes | Nodes by Country | All Nodes | Mini All Nodes | Information | Lat/Long/US Zip | New Nodes | Credits | IRLP Website

Options for Summary Page:

Reflector Usage: ☐ Show Connected Nodes: ☐ Show Country: ☐ Reflector Summary: ☑ Save

NEW Quick Node Detail by number -

Network Summary

Active	Idle	In Calls	Down	Offline
1617	1283	334	59	33

Reflector Summary

		Channels								
Reflector	Reflector Name/Location	0	1	2	3	4	5	6	7	8	9
9000	Vancouver						2	1			
9010	Discovery Reflector										1
9020	Vancouver 2010	3									
9030	Ontario Public Service Reflector		6								
9050	East Coast Reflector	9	1		5						
9070	Alaska Reflector	42				5					
9090											
9100	WIN System Reflector	46									1
9120	New England Reflector				2		4	2			
9190	Seattle Reflector						5			1	
9200	Crossroads Reflector	2	4	2						7	
9210	Raleigh	4									
9220	openIRLP Reflector			2	2					3	
9250	Western Reflector	20			1		2			4	
9300	Saskatchewan Reflector	2					2				
9310	Fredericton										
9330	Central Region Reflector										
9350	LAX - [WALA] Hub	6						2		2	
9360	Michigan (Fenton) Reflector										1
9440	Internet2 Research Reflector										
9450	Dallas		2	1		2	1	8	3	2	
9500	Sydney - Virtual PUB		1								
9550	Adelaide - Virtual Pub Back Bar					1	4				
9610	Great Lakes Reflector		1				2			1	
9620	Wisconsin Reflector					1					
9660	Micro-Node Reflector	9			2			2			
9730	Crossroads Annex			2							
9750	The UK Reflector										
9770	Norwegian Reflector	6									
9870	Denver Reflector			2	3	4	2				

Live Streaming Audio From IRLP

The Crossroads Refector	http://live.irlp.net:8000/listen.pls Reflector 9200 http://live.irlp.net:8010/listen.pls Sub Channel 9201
WINSYSTEM The Western Intertie System	Listen to the WINSYSTEM via the Internet http://www.winsystem.org/Downloads/Streaming_Audio/streaming_audio.html
DB0VOX Node 5515 and Echolink DB0VOX-R	*http://db0fhn-i.ampr.org/db0vox/stream.pls* This fulltime stream from Nuernberg telecommunication tower is streamed directly from the repeater (280m aboveground) through a wireless 5km Link to university Nuernberg.
VK3JED Node 6390 and EchoLink VK3RTL-R	*http://live.vkradio.com:7170/listen.pls* Several scheduled nets throughout the week. Info at http://vkradio.com
K1SOX & W1WPD Node 7505 & 4663	*http://sparc.us/audio/Streaming/147-505.wmx* This will stream the 147.505 Rptr in the left channel and the W1WPD Rptr in the right channel. Use your balance control to adjust. Please go to http://sparc.us for more information.
IRLP Reflector NEW 9050	WB2JPQ Interlink IRLP Reflector 9050 Live Audio Feed http://www.radioreference.com/apps/audio/?action=wp&feedId=5253
Node 5971 IT9DLN Menfi - ITALY	Full time streaming audio of EchoIRLP node 5971 on 144.975 MHz located in Menfi, Italy http://it9dln-irlp.homelinux.org:8000/listen.pls
Node 3867 W5DEL	The Del City Radio Amateur Radio Club IRLP node 3867. Del City, OK
WX4NHC	During Hurricane season, Kevin KD5WX maintains the *http://www.voipwx.net/* site daily and are called by the NHC to activate the net, concurrent with the HF watch nets.
Node 3717 KD5AR Arkansas	http://www.radioreference.com/apps/audio/?action=wp&feedId=5029 KD5AR reports the stream now works with all browsers
VE7ISC repeater in Nanaimo	http://ltr.tac9ca:8000/nara-ve7isc-repeater.m3u
Greenwood / Ft.Smith Arkansas Area	http://www.radioreference.com/apps/audio/?action=wp&feedId=5537
N6ICW/R Sacramento / Lake Tahoe. Node 7650 Streaming Denver Reflector 9873	http://72.245.148.218:8022/listen.pls
24hr Streaming Audio Reflector 9010 ch. 9. KP4IP Puerto Rico	http://www.kp4ip.com/stream.html or http://www.kp4ip.com/mobile/kp4ip_mobile.html Net every Monday @ 8:00pm (Caribbean Hour -4) Originated from Puerto Rico Net Monday to Friday @ 7:00am (Caribbean Hour -4) Originated from Dominican Republic
NEW Node 3892 is now streaming 24/7	http://www.wd7f.com/newbartaudio.htm

IRLP and Echolink RF Connections

- Just like normal repeaters, they can be operated as private or open systems
- Open systems may or may not require a DTMF password before entering the node number (IRLP = 4 digits, Echolink = 6 digits)
- It is courteous to ask if a system is an open system, and identify yourself, prior to initiating a contact. You may pre-arrange by email before traveling
- Make sure you have a sufficiently strong signal to be able to knock down a connection (there is usually an inactivity timer and a distant non-reflector user can usually disconnect)
- Listen for local simplex or repeater activity before initiating a connection
- Listen for distant IRLP or Echolink activity before making a call
- Wait 2 seconds between each transmission and after each PTT
- Do not engage in local conversations, especially when on a reflector
- Identify after you disconnect and thank the node owner/organization

Setting Up Your Own Node

- IRLP
  - Broadband Internet preferred
  - PC with Ethernet and Soundcard (CentOS Linux)
  - Radio (can be local for just coverage of your QTH)
  - IRLP Interface Card - $188 from VE7LTD
- Echolink
  - Broadband Internet preferred
  - PC with Ethernet and Soundcard (Windows)
  - Radio (optional)
  - PTT interface (same as used with digital modes)

Typical Node in Repeater Configuration

See this article in recent issue of QST

IRLP - Keeping the Radio in Amateur Radio

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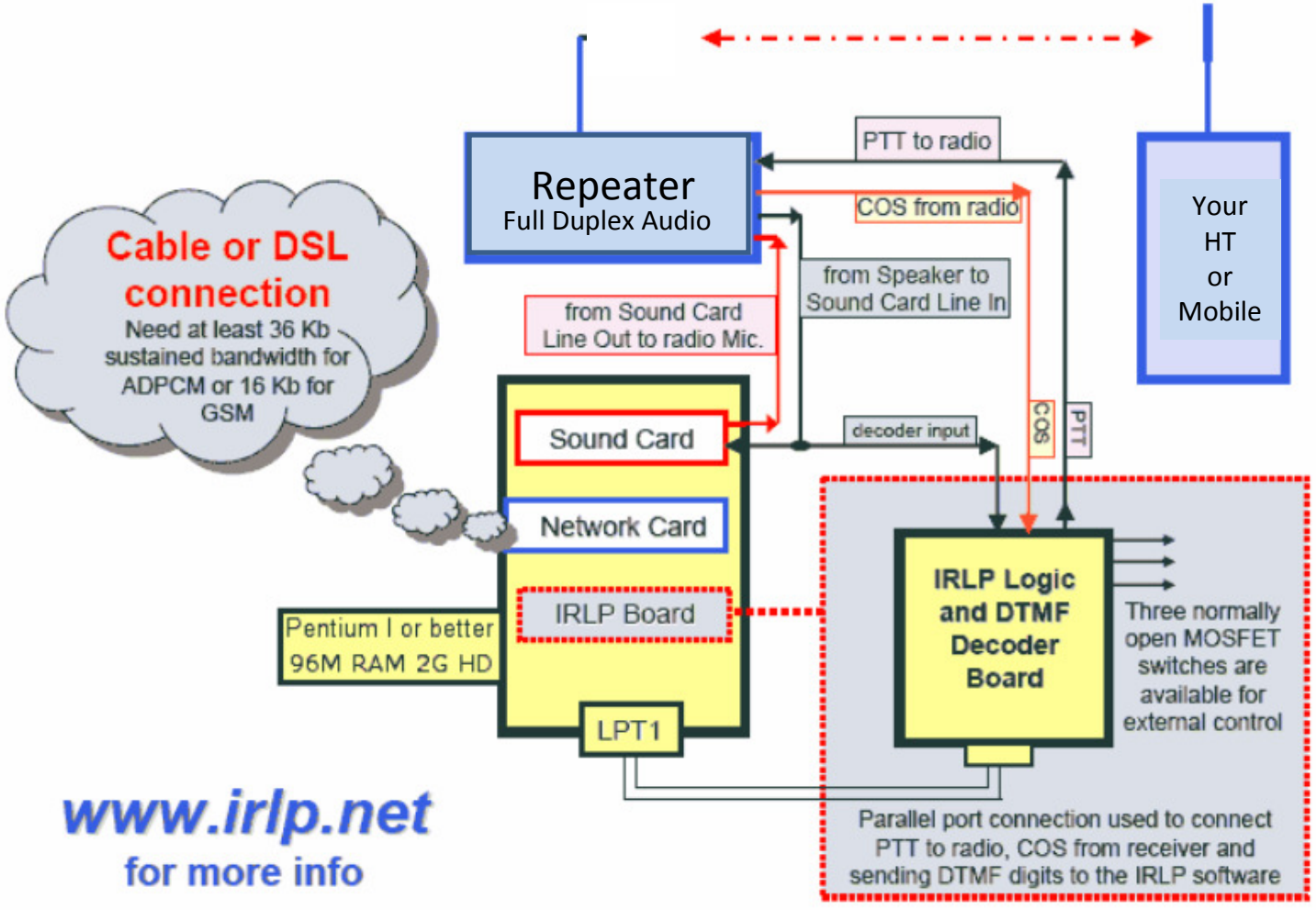
A Typical IRLP Node



Typical Node in SIMPLEX Configuration

See this article in recent issue of QST

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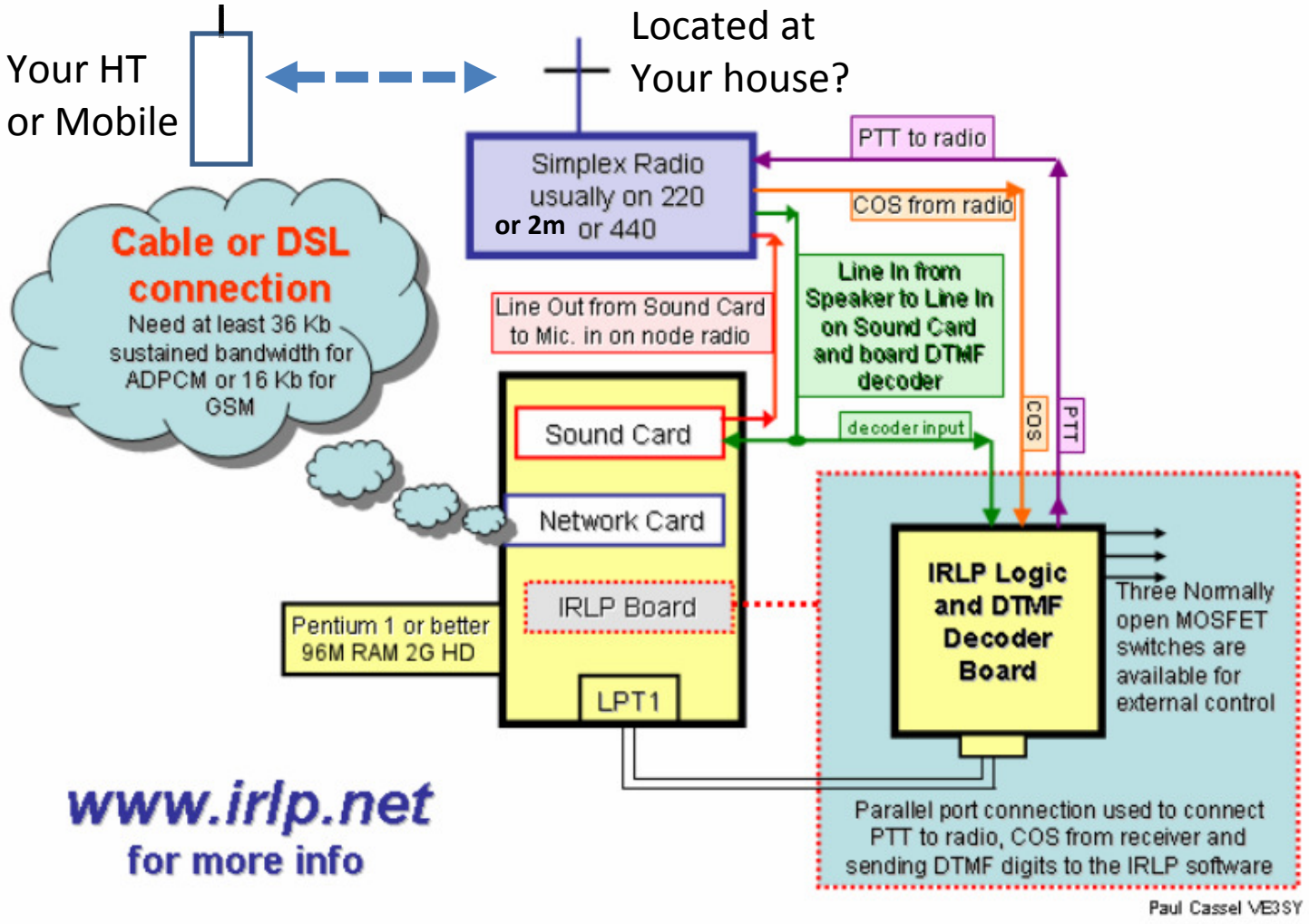
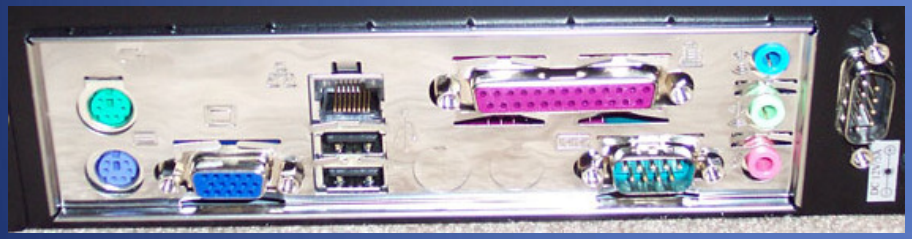
Typical IRLP Simplex Node



Embedded EchoIRLP Node $700 (without radio)



TECHNICAL DETAILS

IRLP v3.0 board mounted and pre-wired *(normally $188)*
1 GHz Fan-less Mini-ITX board w/customized BIOS firmware
512 Meg of Ram
256 Meg IDE Flash Drive (not compact flash)
Compact case (uses one small and quiet 12V fan)
- 8.25" x 2.6" x 10.8" or 210mm x 65mm x 275mm
- About same size as a ream of 8.5" x 11" paper

FEATURES

PHP Enabled web server
- Runs IRLP WEB ADMIN system
- Easy to add on additional PHP scripts to enhance system

No hard drive
- Boots from flash device
- Runs quickly in RAM drive
- OS not suceptable to power fluctuations
- Flash card is easily updatable
- Reduced noise
- Reduced power consumption

Linux pre-installed
- Node number already assigned and tested (new or existing)
- All hardware already pre-configured

RS232 serial port and minicom installed
- Allows direct interface to controller at repeater site
- Serial port can also be used as a serial console (no monitor required)

All wiring internal to case
- No external parallel port cable
- No external audio jack wiring
- All interfacing to radio through a single DB-9 connector

12 volt operation (multi voltage AC adapter included**)
- Good for low power consumption - 14 watts average usage
- Single power supply for radio/repeater and node computer

** Note that supply must be **less** than 12.5V average
** Special power supplies for higher voltage (13.8V) upon request

Common used IRLP scripts and features already installed:
- **EchoIRLP**
- **IRLP Controller**
- **IRLP Web Admin**
- **Saytime/date scripts**
- **Star69**
- **Automated CW ID**

Simple configuration script turns on/off certain features easily

IRLP Link Radio Interface and Plug and Play Info

Pin-outs for known good IRLP PnP radios

Motorola GE Phoenix GE MVS ALINCO
ICOM IC-207H

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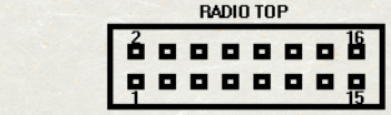
MOTOROLA M SERIES RADIOS

with 16 pin option connector

You should check eBay for the following search words. GM300, MAXTRAC, M120. You must make sure the radio has a 16 pin option connector. **The 5 pin radios DO NOT have COS at the plug .**

GM300 shown here



RADIO BOTTOM
ACCESSORY CONNECTOR
LOOKING AT BACK OF RADIO

1 EXT SPKR -
2 MIC AUDIO IN
3 PTT
4 EXTERNAL ALARM
5 FLAT TX AUDIO
6 PROG I/P 6
7 GROUND
8 COS (programable)
9 EMERGENCY ALARM
10 IGNITION CONTROL
11 RX AUDIO OUT
12 PROG I/O 12
13 SW A+ SENSE
14 PROG I/O 14
15 INT SPKR +
16 EXT SPKR +

Pin -Outs for ALL Motorola 16 pin radios

TX audio in=2 * a 10UF Non-polarized DC blocking cap in series may be required
PTT = 3
Gnd = 7
COS = 8 active low on carrier or valid PL
NOTE: on 16 & 32 ch models, this pin is programmable for other functions
RX audio out = 11

The mic connector on the radio panel

Internet Router Ports

- IRLP
  - 22 - SSH *(required only for any requested remote admin help)*
  - 2074 through 2093 UDP - IRLP Audio (bi-directional **UDP**)
  - 15425, 15426, 15427 IRLP Control/Update Ports – **TCP**
  - Static or dynamic IP addresses are ok
  - CentOS Linux 4.4 or newer for new nodes
- Echolink
  - UDP destination ports 5198-5199, Internet-PC in both directions
  - TCP (source port any, destination port 5200) from PC to Internet
  - Supports public proxy sites for public site access such as hotels

EchoLink Proxy List

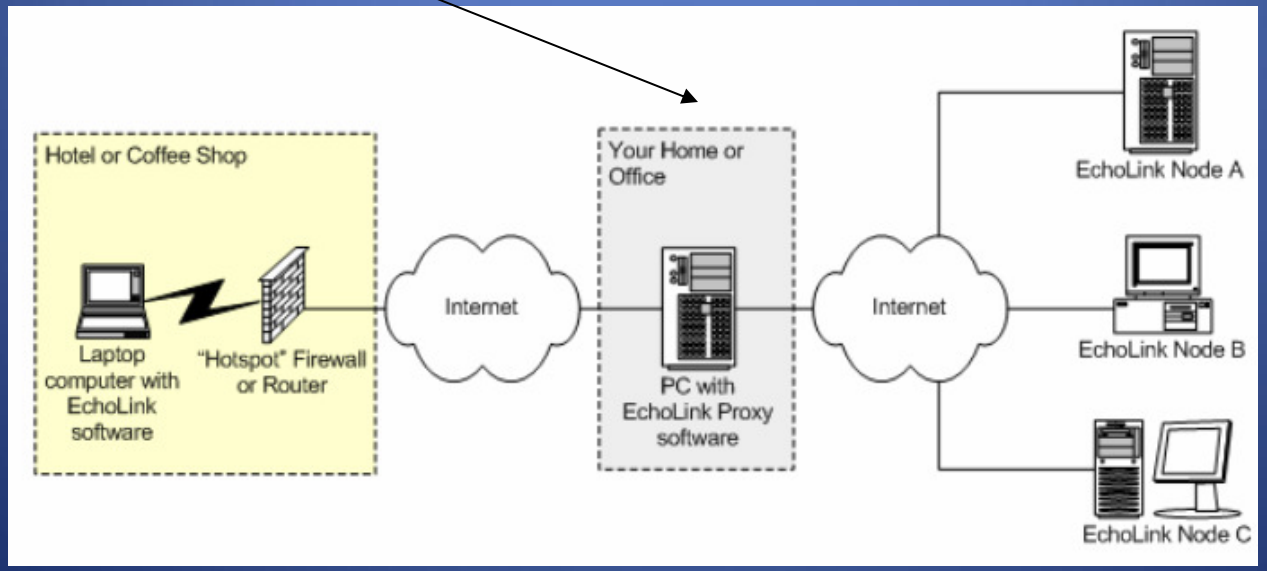
The following "public" EchoLink Proxy servers have reported their status within the last 10 minutes.

The owners of each of the following servers have indicated (in their proxy configuration file) that they welcome any registered EchoLink user to use their EchoLink Proxy. These are shared resources; please be considerate and use them sparingly.

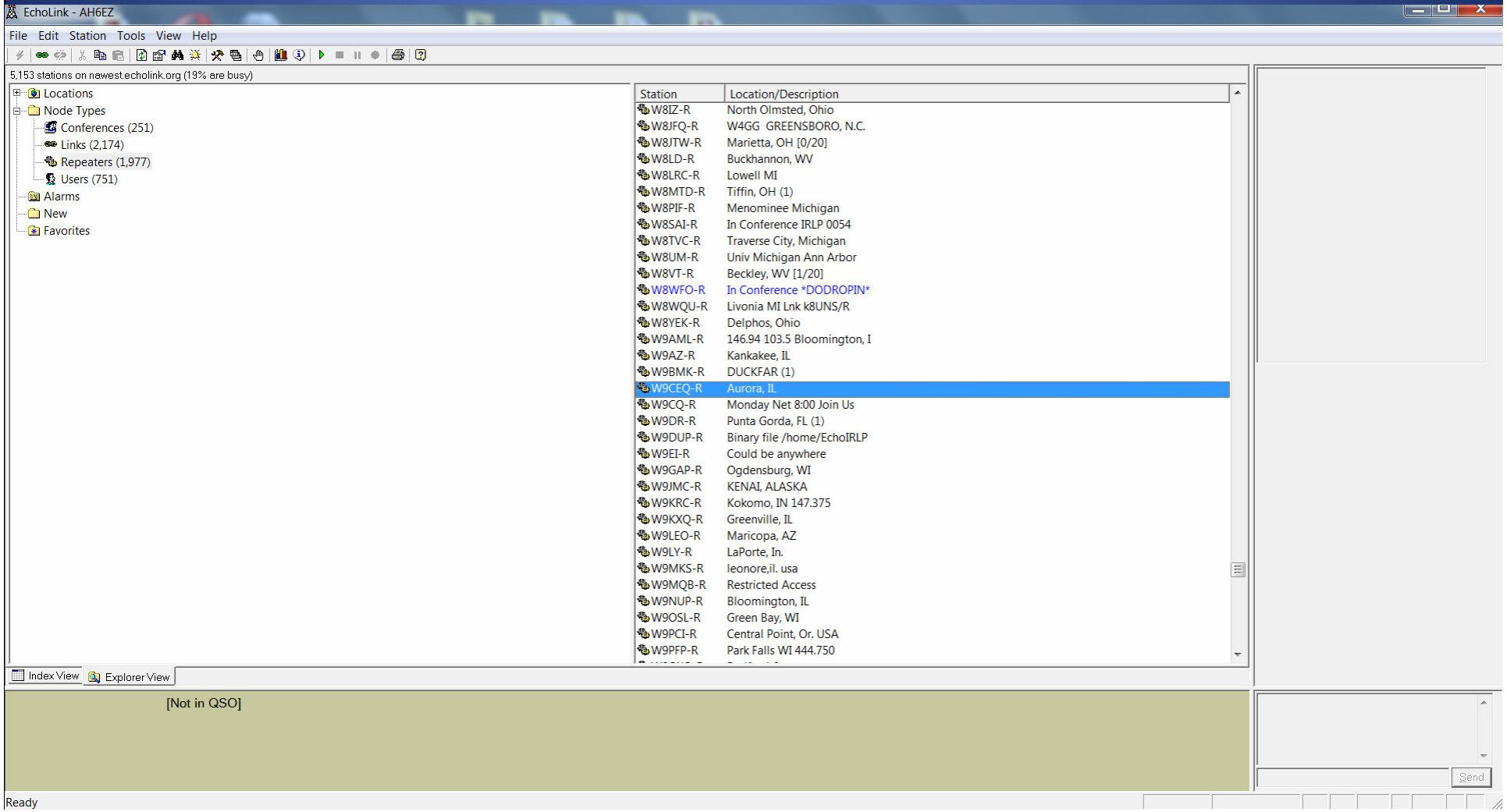
The password to access any of the following proxies is: **PUBLIC**.
The port number (unless otherwise stated) is: **8100**.

As of: 00:09 UTC [Refresh]
Public Proxies: **224** (**136** are busy)
Private Proxies (not shown below): **74**

Name	Host Address	Port	Last Updated (UTC)	Status	Ver	Comments
NX9G-1	66.90.87.51	8100	00:02	Ready	1.2.3	This proxy is located in Chicago, Illinois. No -L and -R nodes are allowed !!
N9JI-2	98.214.43.218	8100	00:00	Busy	1.2.3	One Hour NO -L -R qsl.net/n9ji
N9JI-1	98.214.15.126	8100	00:08	Ready	1.2.3	One Hour NO -L -R qsl.net/n9ji
W8FSM #060	67.91.181.60	8100	00:03	Busy	1.2.3	Welcome All; W8FSM Public EL-Proxy. Questions/Info visit http://moses.bz/el-proxy/
W8FSM #059	67.91.181.59	8100	00:02	Busy	1.2.3	Welcome All; W8FSM Public EL-Proxy. Questions/Info visit http://moses.bz/el-proxy/
W8FSM #058	67.91.181.58	8100	00:02	Busy	1.2.3	Welcome All; W8FSM Public EL-Proxy. Questions/Info visit http://moses.bz/el-proxy/
W8FSM #057	67.91.181.57	8100	00:03	Busy	1.2.3	Welcome All; W8FSM Public EL-Proxy. Questions/Info visit http://moses.bz/el-proxy/
W8FSM #056	67.91.181.56	8100	00:02	Ready	1.2.3	Welcome All; W8FSM Public EL-Proxy. Questions/Info visit http://moses.bz/el-proxy/
W8FSM #055	67.91.181.55	8100	00:02	Busy	1.2.3	Welcome All; W8FSM Public EL-Proxy. Questions/Info visit http://moses.bz/el-proxy/

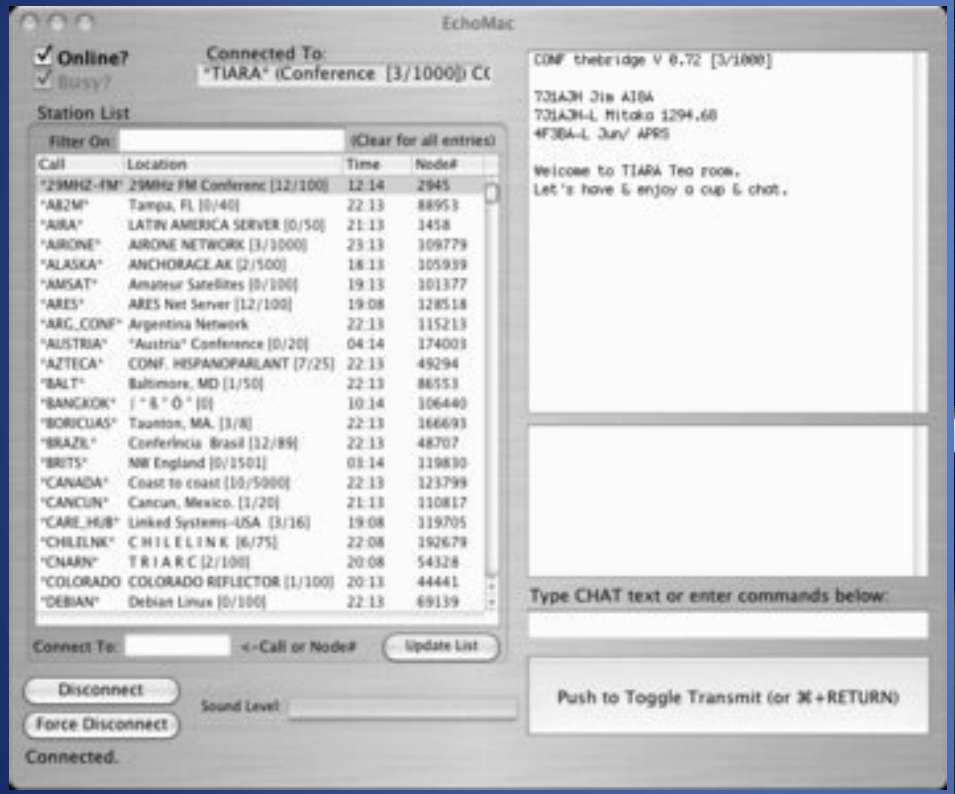


Echolink runs on Windows XP, Vista, and 7

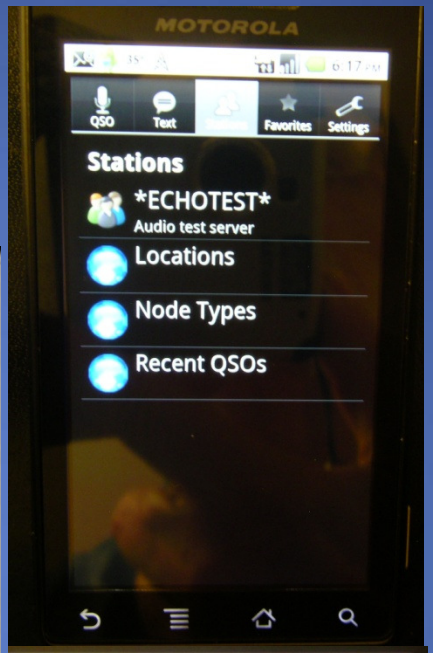


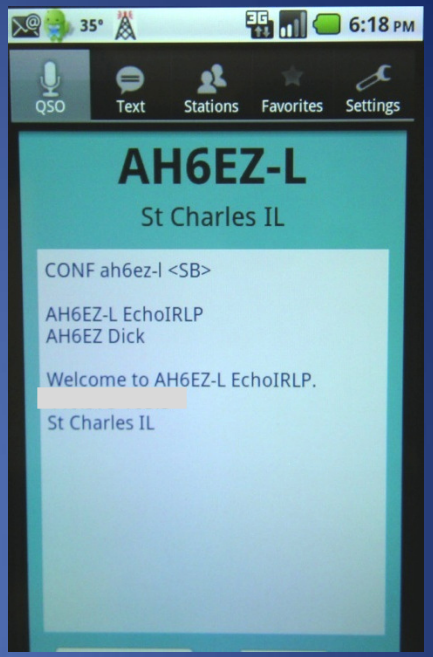
Other Echolink Platforms

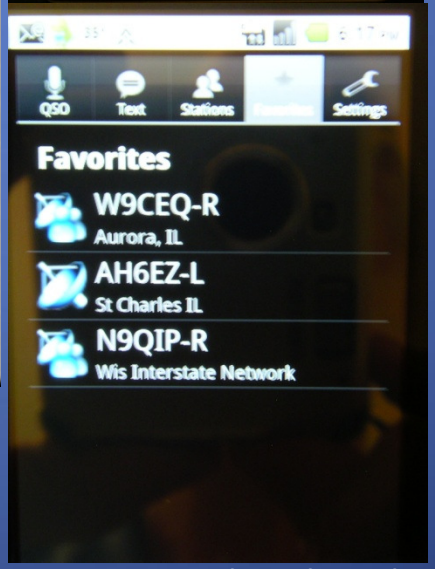
Mac OSX >10.3.6



Somewhat less functional than Windows







Android and iPhone similar

Demonstrations

(Subject to Indoor RF Coverage)

- IRLP via radio
  - Connect to a reflector
  - Connect to a node
- Echolink via radio
  - Connect to a node
- Echolink via a PC
- Echolink via Android phone (WiFi or 3G)

This presentation will hopefully be available on WCRA www.w9ccu.org web site