ECHOLINK
&
ALLSTARLINK

FOX RIVER RADIO LEAGUE

WHAT IS VOIP

Voice over Internet Protocol (VoIP), also called IP telephony, is a method and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks.

HAM VOIP – ANALOG SYSTEMS

- Echolink
- IRLP
- AllStarLink
- Hamshack Hotline

TYPES OF HAM RADIO LINKING FOR VOICE

- Fully Digital
  - Digitized audio end-to-end - from your microphone to their speaker
  - Requires new radios & repeaters, all require some proprietary, closed components
  - Examples: DMR, DSTAR, System Fusion

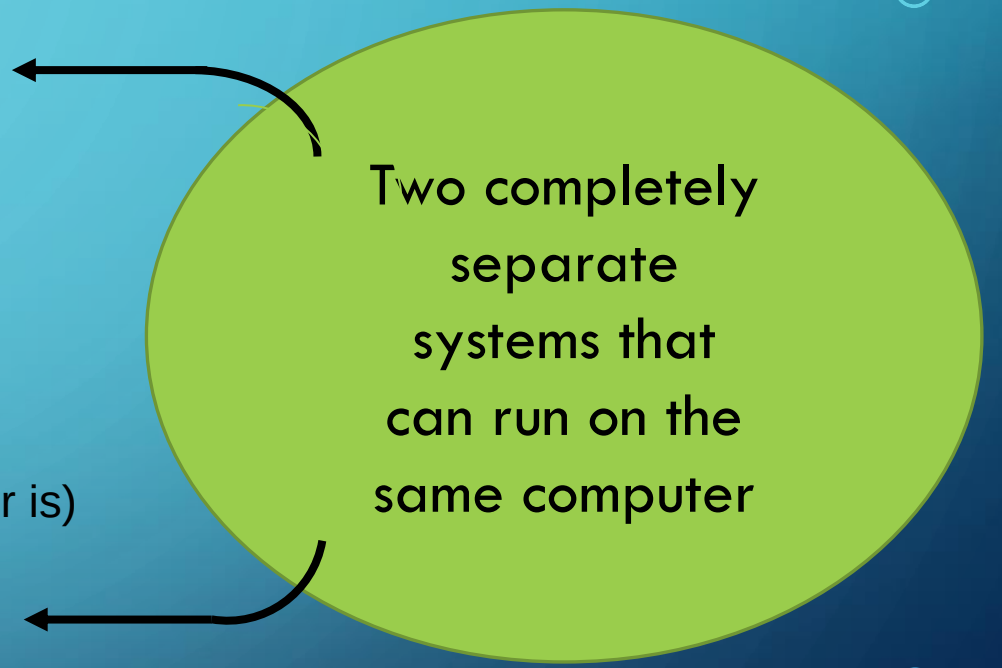
- Analog over IP
  - Analog RF to repeater - digital IP between repeaters, simplex nodes, computers
  - Overlays nicely on top of existing radios and repeaters
  - Can add Internet connections from PCs, smartphones
  - Examples: IRLP, Echolink, AllStarLink

- Analog over analog radio
  - Analog (usually FM) end-to-end
  - Limited distance, can lose quality with each hop
  - Examples: FM radio links, split-site repeaters

HAM RADIO VOIP SYSTEMS

- Echolink (http://echolink.org)
  - Radio/Smartphone/PC to Radio/Smartphone/PC
  - Good (but not great) voice quality
  - Easiest Smartphone option
  - Has some network limitations
  - Used to require Windows PC at repeater

- AllStarLink (http://allstarlink.org)
  - Radio/Smartphone/PC to Radio/Smartphone/PC
  - Smart Phone and PC support works, but is a little “rough”
  - Great, crystal clear voice quality (as good as the radio/repeater is)
  - Best repeater-to-repeater options
  - Very flexible network options
  - Can function without the Internet (using private networks)



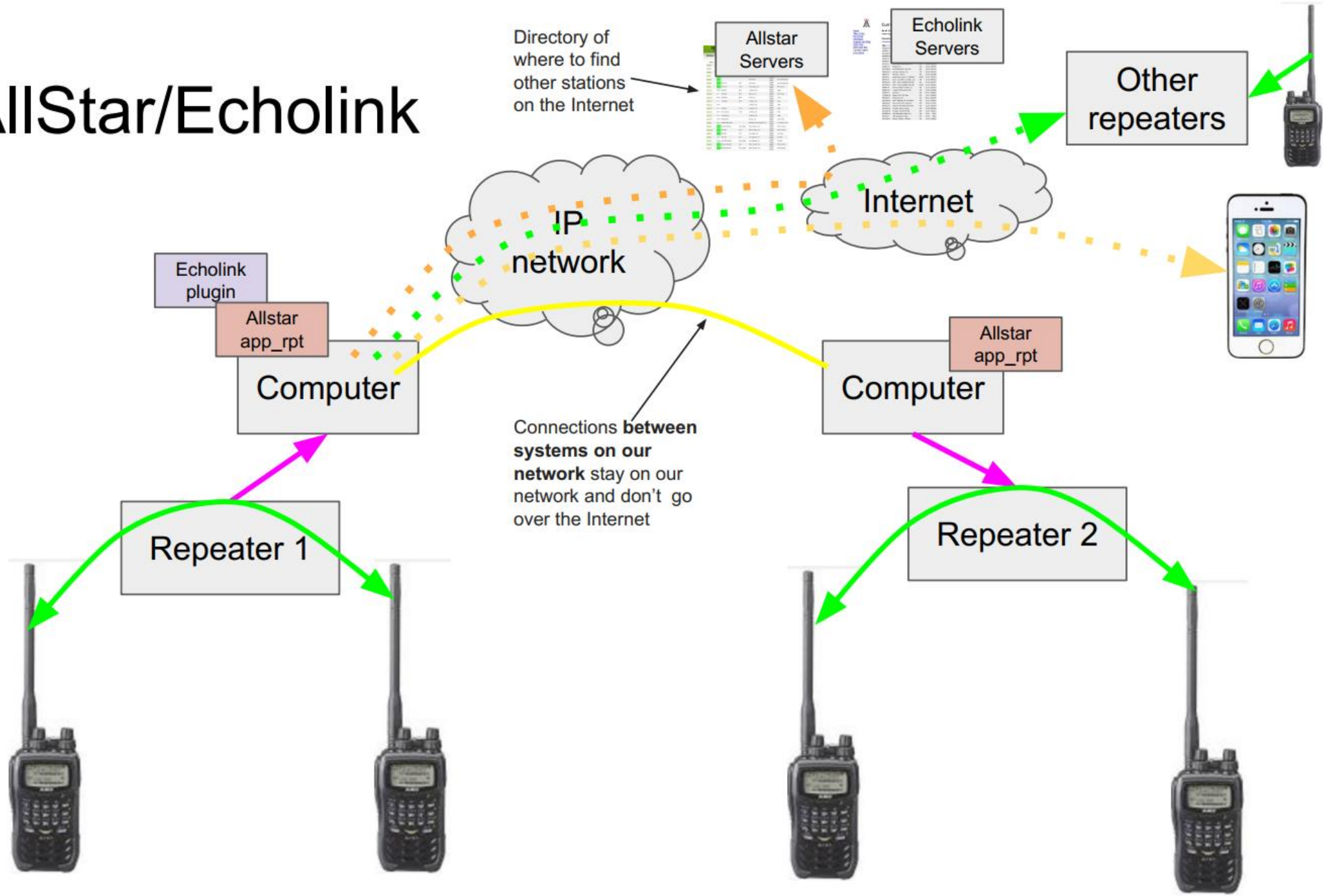
ALLSTARLINK SOFTWARE - SOME DETAILS

- Based on Asterisk - a free, open source Linux based PBX phone system
  - Asterisk used in business to handle many phone extensions, voicemail, auto-attendant, etc
  - Adapted a little to connect radio systems
  - Carries voice, and PTT, COS, other radio-specific information
- App runs on Linux called “app_rpt” that handles Allstar connections between repeaters, simplex nodes, computers
- Can run on any Linux computer (PC, laptop, Raspberry PI, etc)

MORE ABOUT ALLSTARLINK

- More than 1500 nodes online across the world as of Feb 2016
- Including:
  - the statewide W3WAN Wide Area Network in PA
  - several other large multi-state systems across the U.S.
- Since it's a completely open standard - hams are experimenting
  - Bridges to DMR digital talkgroups, DSTAR reflectors, Echolink
  - Lots of small simplex nodes at people's houses
    - You can make your own (later in these slides)
  - Some huge statewide and worldwide networks
  - Some small scale networks with 2-3 repeaters linked
  - Some systems are interconnected full time, some on demand

How AllStar/Echolink work



ECHOLINK SOFTWARE DETAILS

Designed by Jonathan Taylor, a radio amateur with call sign K1RFD

Official software runs on Windows PC and smartphones

Third party projects can run on Linux SBC's

Easiest for end user to install and use

HOW DO I GET STARTED WITH ECHOLINK

- Start at www.echolink.org
- Get Authenticated – You will need an **ORIGINAL** copy of your license

  https://www.echolink.org/validation/uls/
- Install the software on your computer or smartphone
- Connect to node *ECHOTEST* to set audio levels
- Connect to the node of your choice

  W9CEQ-R node 230933

EchoLink

File Edit Station Tools View Help

Setup Wizard

Welcome to EchoLink. This wizard helps you get your new software up and running quickly.

Note: Access to the EchoLink system is granted to licensed Amateur Radio operators only.

Click Next to continue, or Cancel to exit.

< Back | Next > | Cancel | Help

Index View | Explorer View

[Ready]

Send

Ready 1234567890

EchoLink

File Edit Station Tools View Help

Setup Wizard

Please select one of the following:

- (•) Computer User
  Select this option if you expect to use EchoLink using your PC's microphone and speaker only.
- ( ) Sysop
  Select this option if you intend to connect radio equipment to your computer and set up a link to a simplex frequency or a repeater.
  - (•) Simplex Link
  - ( ) Repeater Link

< Back | Next > | Cancel | Help

Index View | Explorer View

[Ready]

Send

Ready 1234567890

EchoLink

File Edit Station Tools View Help

Setup Wizard

Please enter the following information:

Callsign:

Password: (If you don't already have one, choose one.)

First Name:

Location:

Email Addr:

< Back | Next > | Cancel | Help

Index View | Explorer View

[Ready]

Send

Ready 1234567890

EchoLink

File Edit Station Tools View Help

Setup Wizard

Please enter the following information:

Callsign: W9YNP

Password: *********

(If you don't already have one, choose one.)

First Name: Curt

Location: Aurora, IL

Email Addr: w9ynp@arrl.net

< Back | Next > | Cancel | Help

Index View | Explorer View

[Ready]

Send

Ready 1234567890

EchoLink

File Edit Station Tools View Help

Setup Wizard

Please select the geographic region which best describes your location.

The most appropriate choice matching your callsign is already selected. If you are unsure, choose Next.

- Africa
- Asia
- Europe
- Oceania
- South America
- North America - East
- North America - West (including Midwest)
- North America - South (Southern U.S., Central America or Carribean)

< Back | Next > | Cancel | Help

Index View | Explorer View

[Ready]

Send

Ready 1234567890

EchoLink

File Edit Station Tools View Help

Firewall/Router Tester

If you connect to the Internet through a router or firewall, or if there is Internet security software installed on your computer, you might need to make certain adjustments for EchoLink to work correctly.

To test your Internet connection now, click the Firewall Test button below. To skip this test (or do it later), click Next.

Firewall Test

< Back | Next > | Cancel | Help

Index View | Explorer View

[Ready]

Send

Ready

1234567890

EchoLink

File Edit Station Tools View Help

Setup Wizard

Setup is now complete!

If you have never before used EchoLink with the callsign you just entered, your callsign must be verified by the system before you can begin using EchoLink.

There are several ways you can validate your callsign for EchoLink. For information about this process, click Finish below, then see the Validation section of the EchoLink Web site.

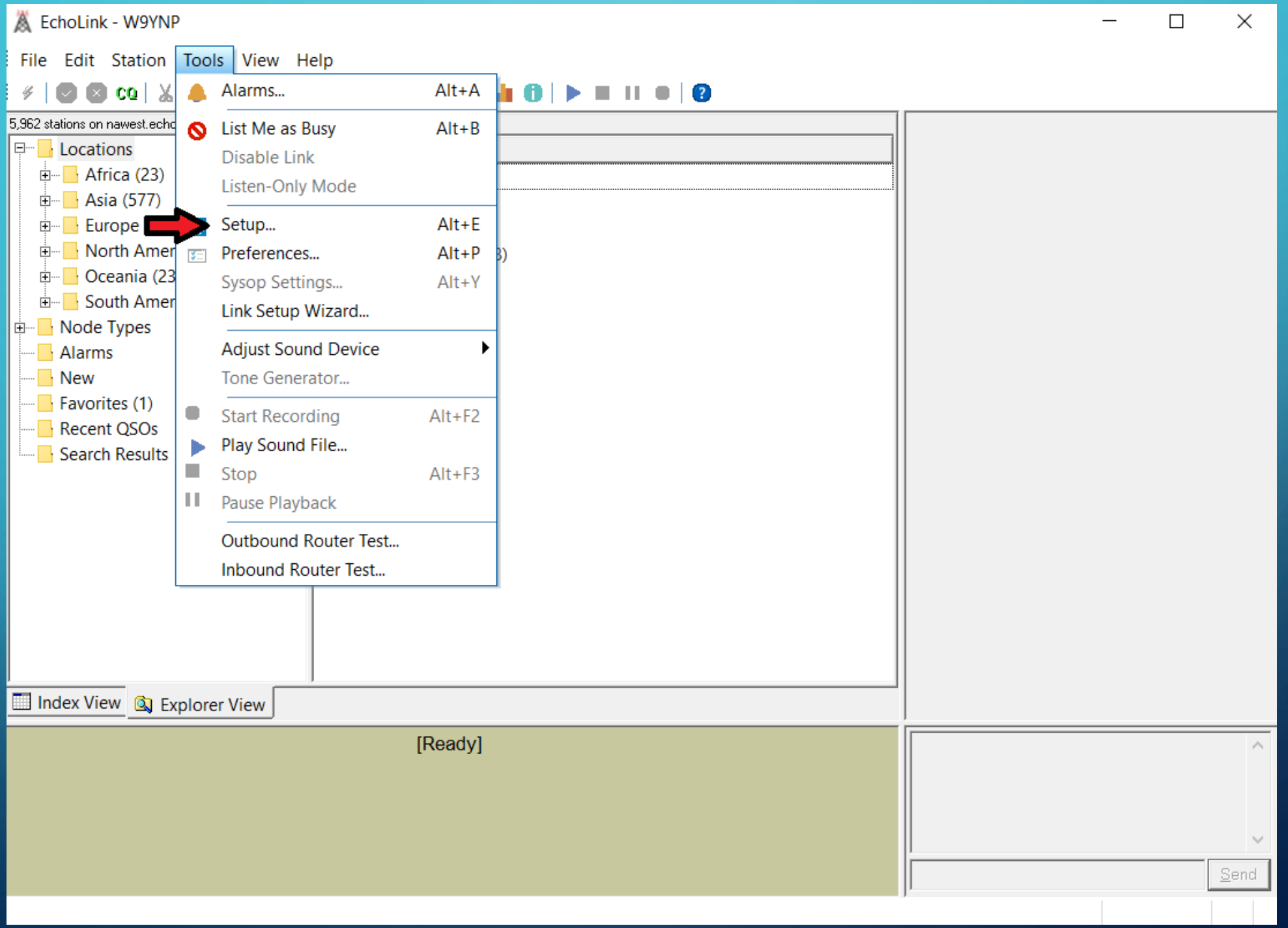
< Back | Finish | Cancel | Help

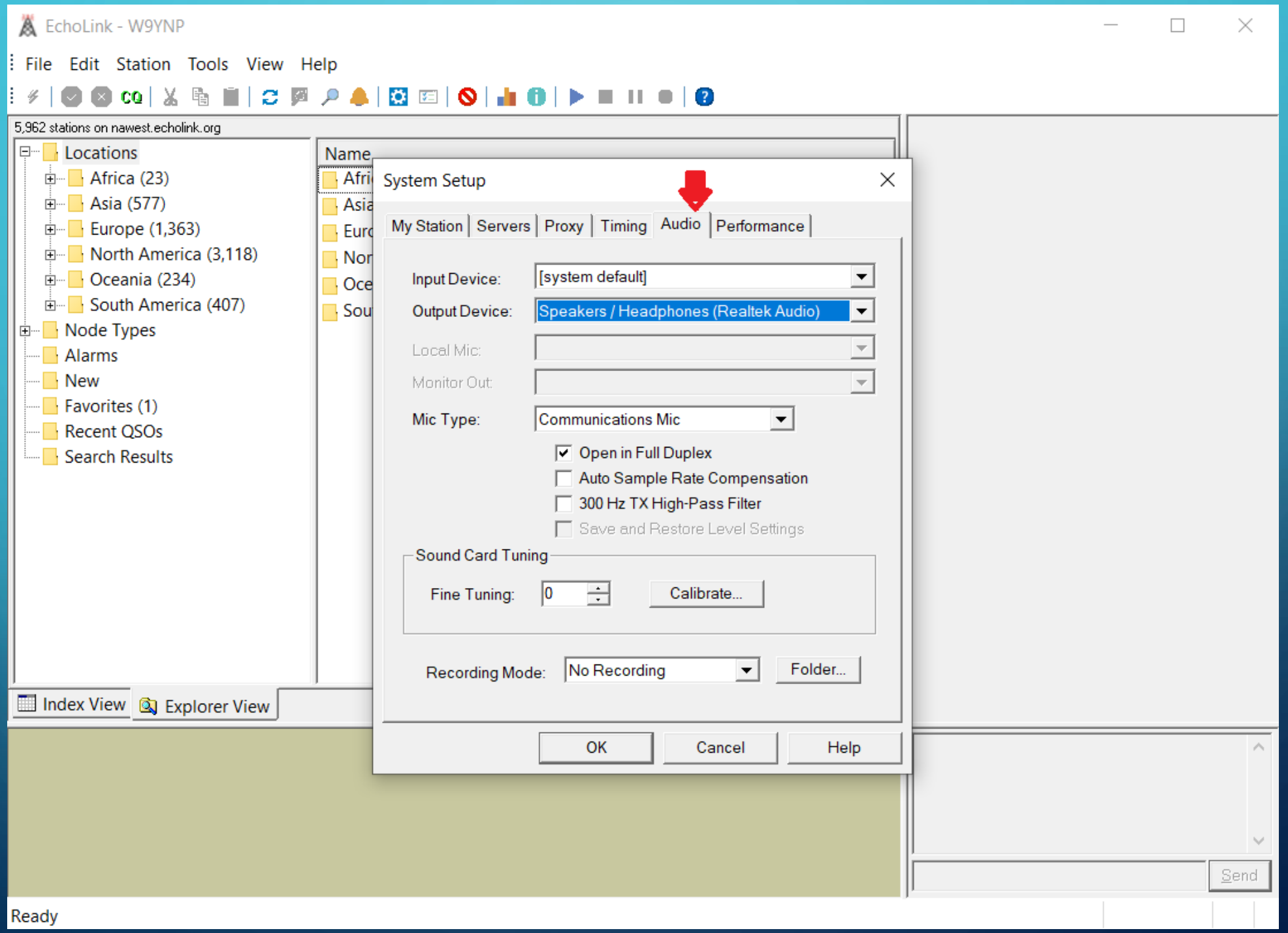
Index View | Explorer View

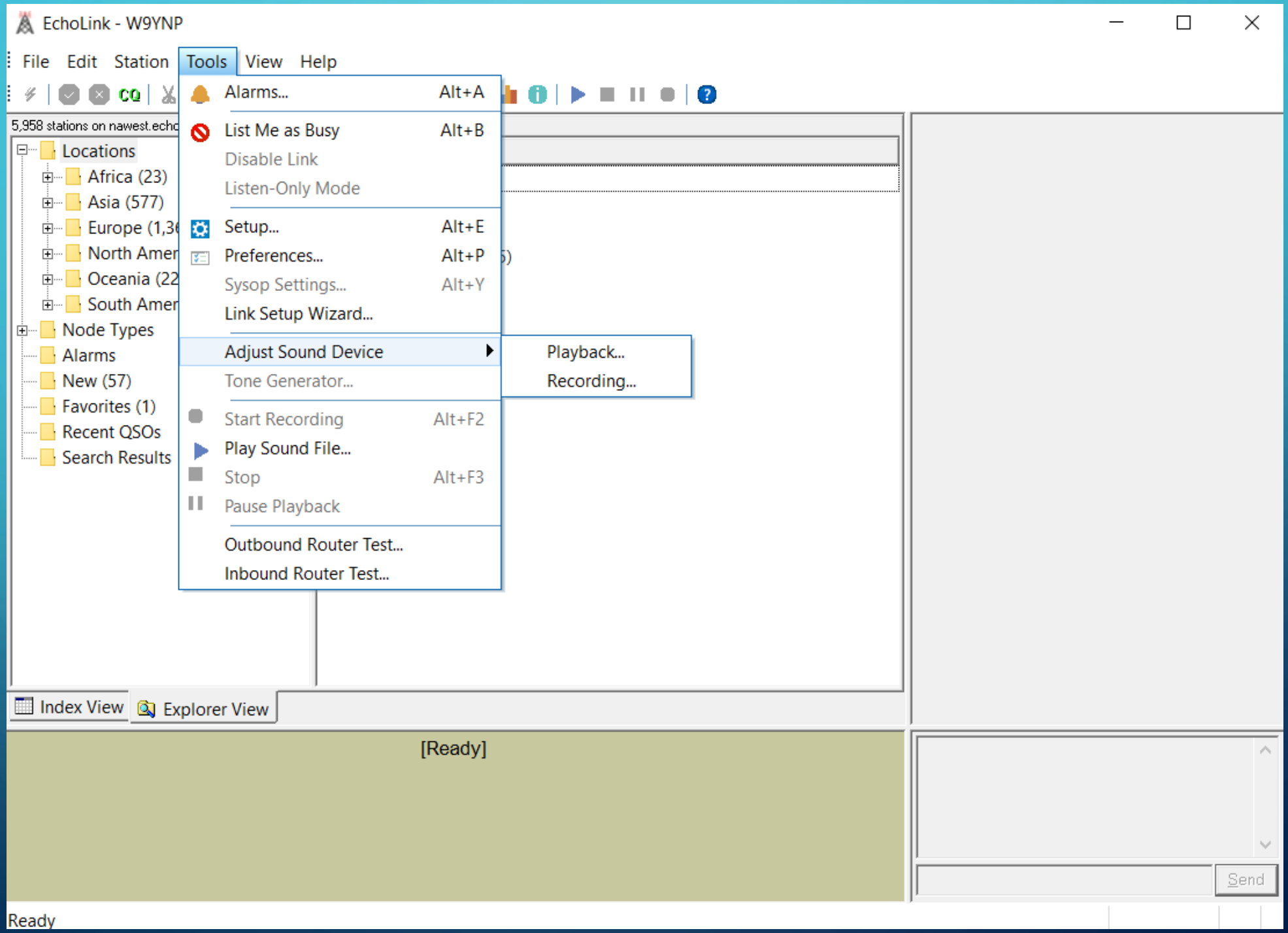
[Ready]

Send

Ready 1234567890


EchoLink - W9YNP
File
Edit
Station
Tools
View
Help
Alarms... Alt+A
List Me as Busy Alt+B
Disable Link
Listen-Only Mode
Setup... Alt+E
Preferences... Alt+P
Sysop Settings... Alt+Y
Link Setup Wizard...
Adjust Sound Device
Tone Generator...
Start Recording Alt+F2
Play Sound File...
Stop Alt+F3
Pause Playback
Outbound Router Test...
Inbound Router Test...
5,962 stations on nawest.echo
Locations
Africa (23)
Asia (577)
Europe
North Amer
Oceania (23
South Amer
Node Types
Alarms
New
Favorites (1)
Recent QSOs
Search Results
Index View
Explorer View
[Ready]
Send


EchoLink - W9YNP
File Edit Station Tools View Help
5,962 stations on nawest.echolink.org
Locations
Africa (23)
Asia (577)
Europe (1,363)
North America (3,118)
Oceania (234)
South America (407)
Node Types
Alarms
New
Favorites (1)
Recent QSOs
Search Results
Name
Index View
Explorer View
System Setup
My Station
Servers
Proxy
Timing
Audio
Performance
Input Device:
[system default]
Output Device:
Speakers / Headphones (Realtek Audio)
Local Mic:
Monitor Out:
Mic Type:
Communications Mic
Open in Full Duplex
Auto Sample Rate Compensation
300 Hz TX High-Pass Filter
Save and Restore Level Settings
Sound Card Tuning
Fine Tuning:
0
Calibrate...
Recording Mode:
No Recording
Folder...
OK
Cancel
Help
Send
Ready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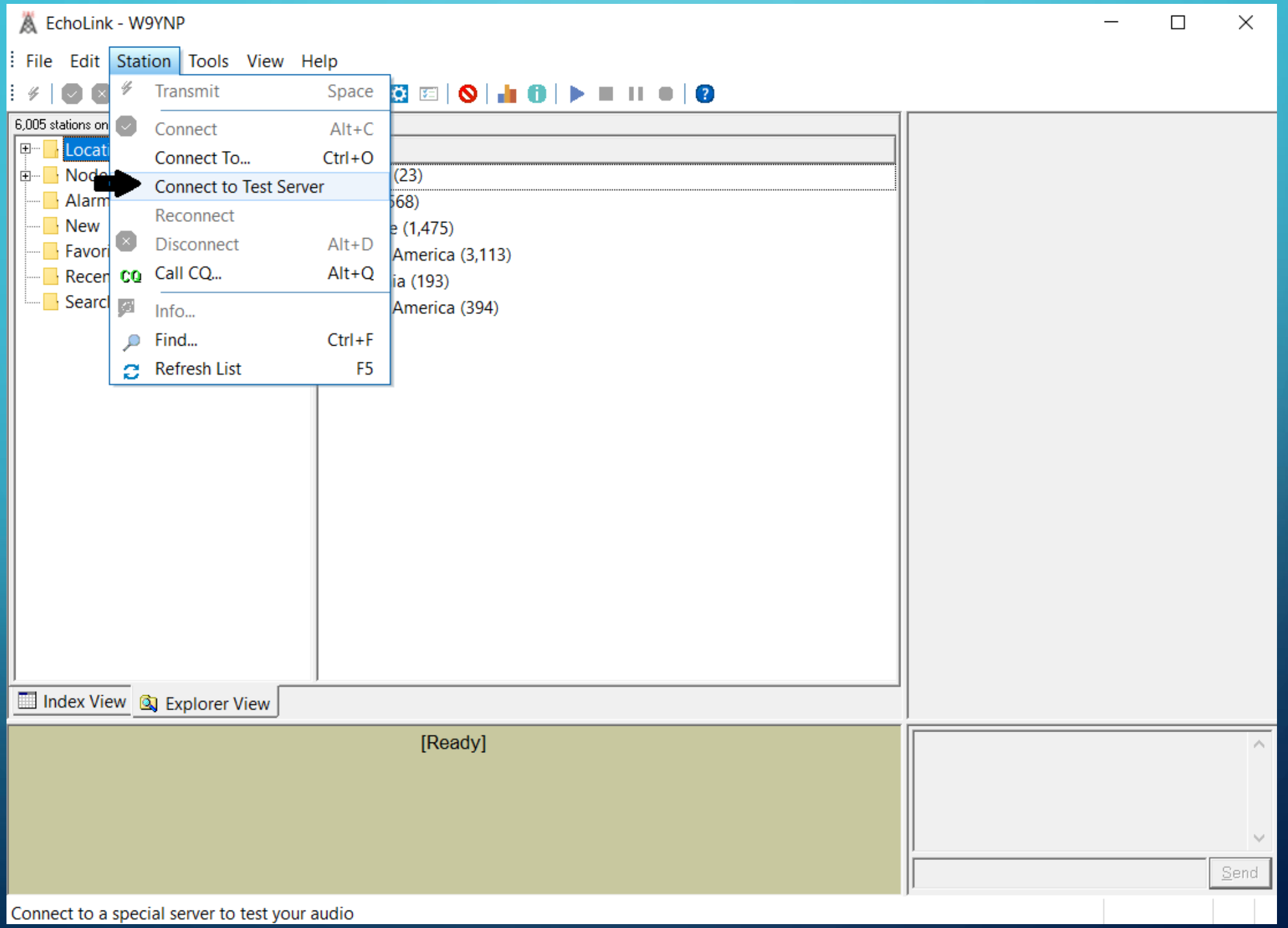
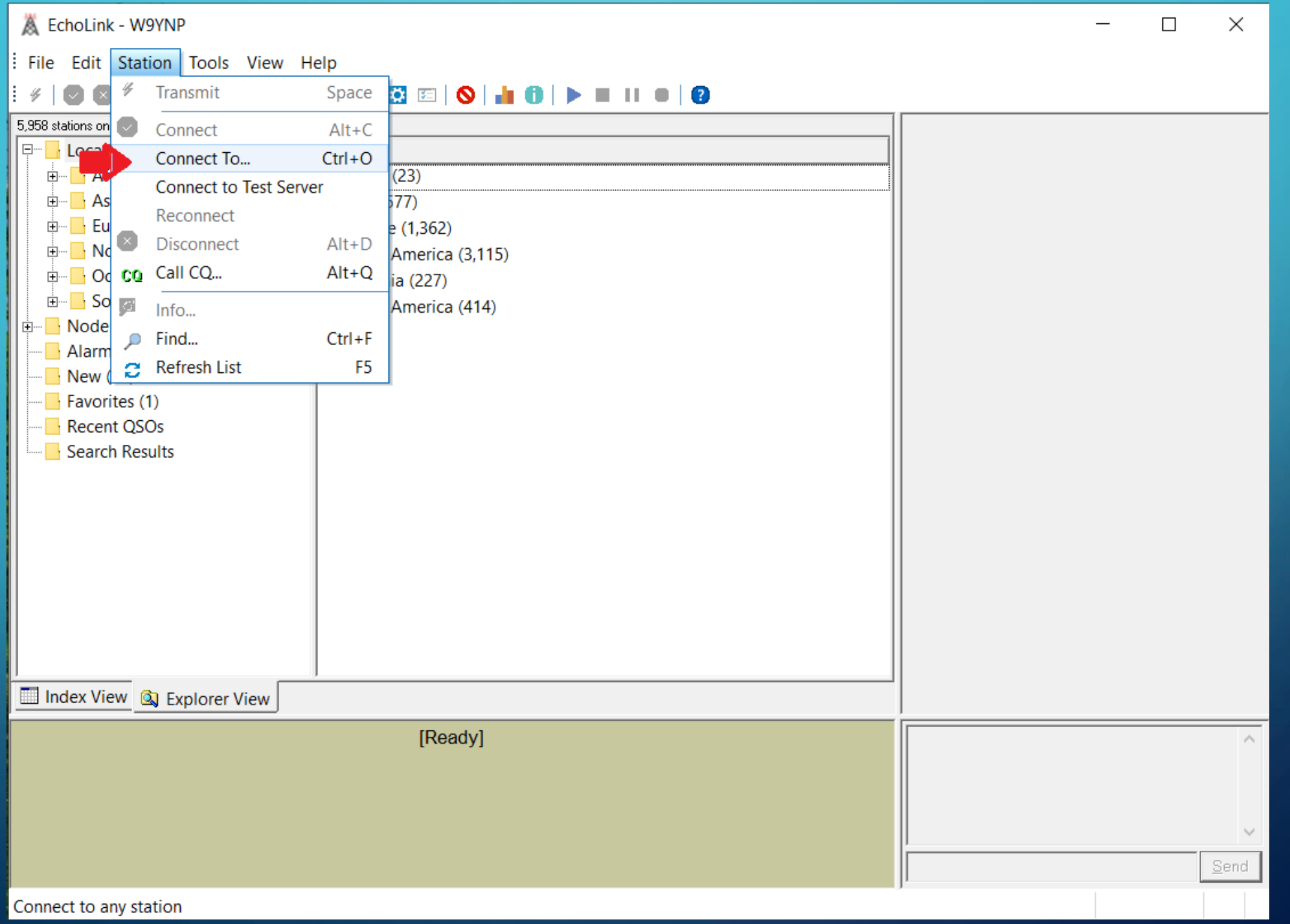
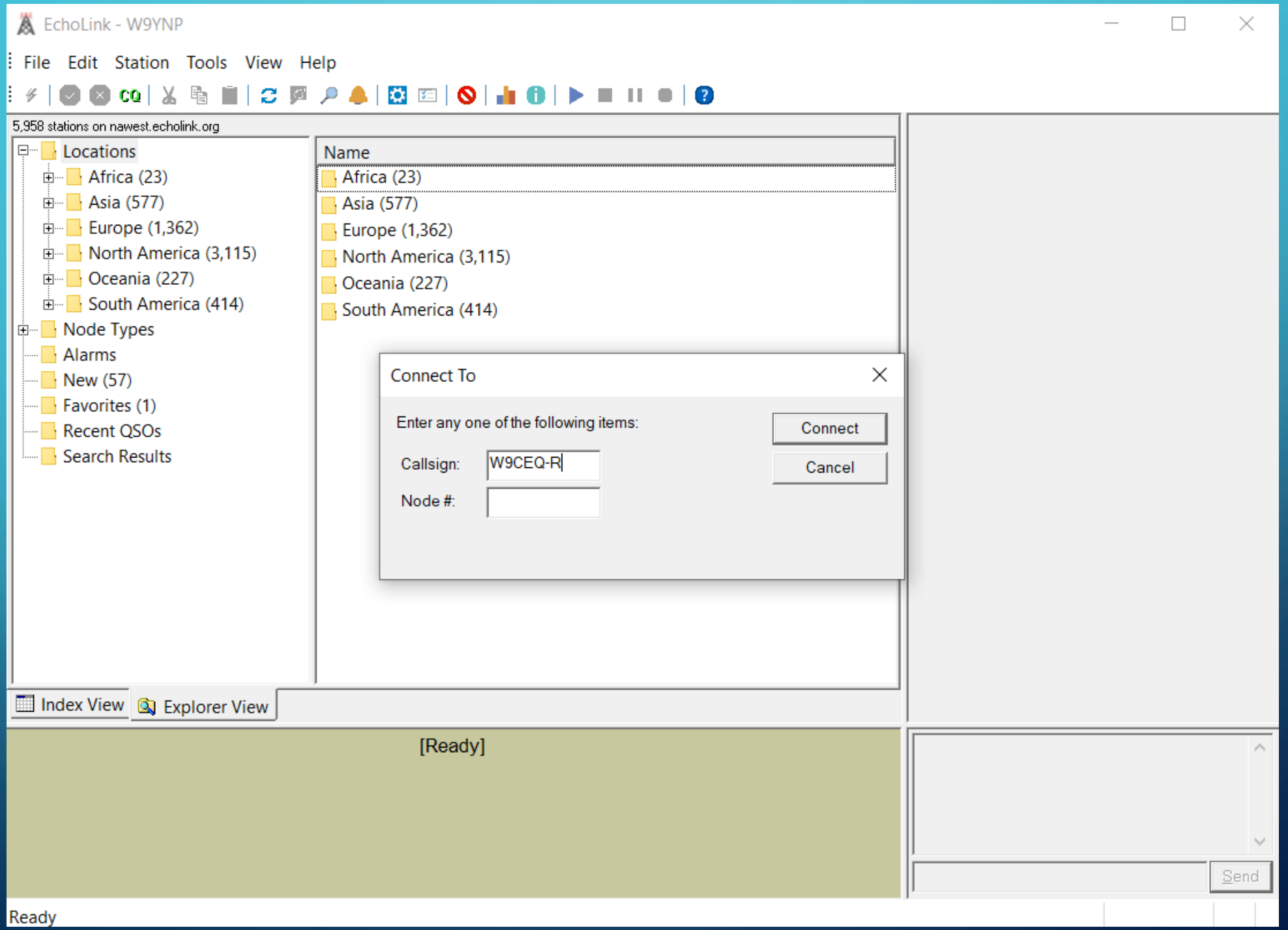
Setup... Alt+E
Preferences... Alt+P
Sysop Settings... Alt+Y
Link Setup Wizard...
Adjust Sound Device
Playback...
Recording...
Tone Generator...
Start Recording Alt+F2
Play Sound File...
Stop Alt+F3
Pause Playback
Outbound Router Test...
Inbound Router Test...
5,958 stations on nawest.echo
Locations
Africa (23)
Asia (577)
Europe (1,3
North Amer
Oceania (22
South Amer
Node Types
Alarms
New (57)
Favorites (1)
Recent QSOs
Search Results
Index View
Explorer View
[Ready]
Send
Ready


EchoLink - W9YNP
File
Edit
Station
Tools
View
Help
Transmit Space
Connect Alt+C
Connect To... Ctrl+O
Connect to Test Server
Reconnect
Disconnect Alt+D
Call CQ... Alt+Q
Info...
Find... Ctrl+F
Refresh List F5
6,005 stations on
Index View
Explorer View
[Ready]
Send
Connect to a special server to test your audio


EchoLink - W9YNP
File
Edit
Station
Tools
View
Help
Transmit Space
Connect Alt+C
Connect To... Ctrl+O
Connect to Test Server
Reconnect
Disconnect Alt+D
Call CQ... Alt+Q
Info...
Find... Ctrl+F
Refresh List F5
5,958 stations on
(23)
(1,362)
America (3,115)
America (414)
Favorites (1)
Recent QSOs
Search Results
Index View
Explorer View
[Ready]
Send
Connect to any station


EchoLink - W9YNP
File
Edit
Station
Tools
View
Help
5,958 stations on nawest.echolink.org
Locations
Africa (23)
Asia (577)
Europe (1,362)
North America (3,115)
Oceania (227)
South America (414)
Node Types
Alarms
New (57)
Favorites (1)
Recent QSOs
Search Results
Name
Africa (23)
Asia (577)
Europe (1,362)
North America (3,115)
Oceania (227)
South America (414)
Connect To
Enter any one of the following items:
Callsign:
W9CEQ-R
Node #:
Connect
Cancel
Index View
Explorer View
[Ready]
Send
Ready

DO I HAVE TO USE A COMPUTER OR SMARTPHONE?

- YES

- At this time the 147.210 repeater does NOT allow connecting to other Echolink repeaters.
- You may connect to the 2 meter repeater via your phone or computer.
- All DTMF Echolink commands will be ignored by the controller.
- This is only phase 1 of the Echolink project.
- Eventually, we will add Echolink support to the 440 system and allow remoting to other systems.

HAVING A QSO WITH AN ECHOLINK STATION

Press PTT and pause for 2 seconds before speaking.

This gives time for all links to become operational otherwise, the first couple words of the transmission will be lost.

Pause a minimum 3-5 seconds between transmissions. Wait for the 'K'

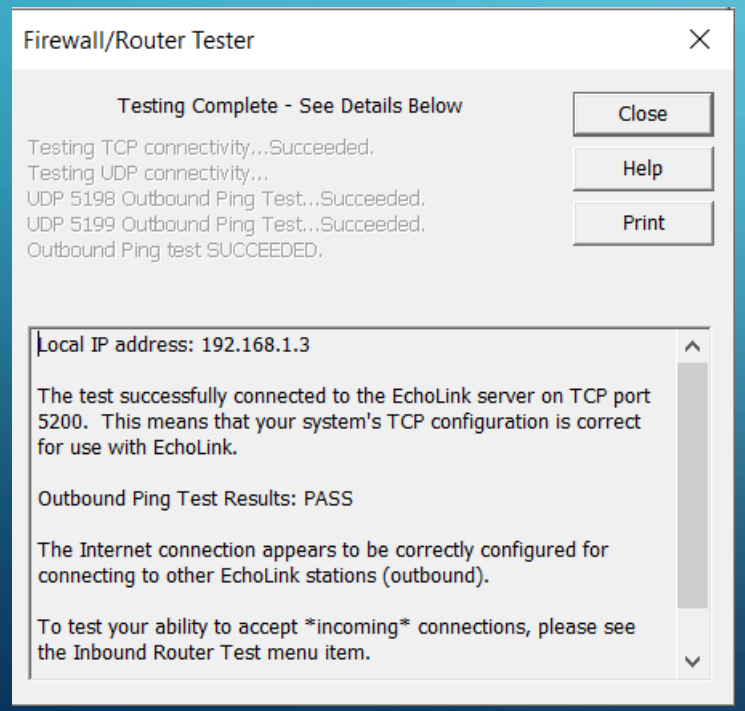
Stations cannot break-in when stations quickly key-up (or "tailgate") after the previous transmission. System timeouts are caused when links are not given proper time to reset.

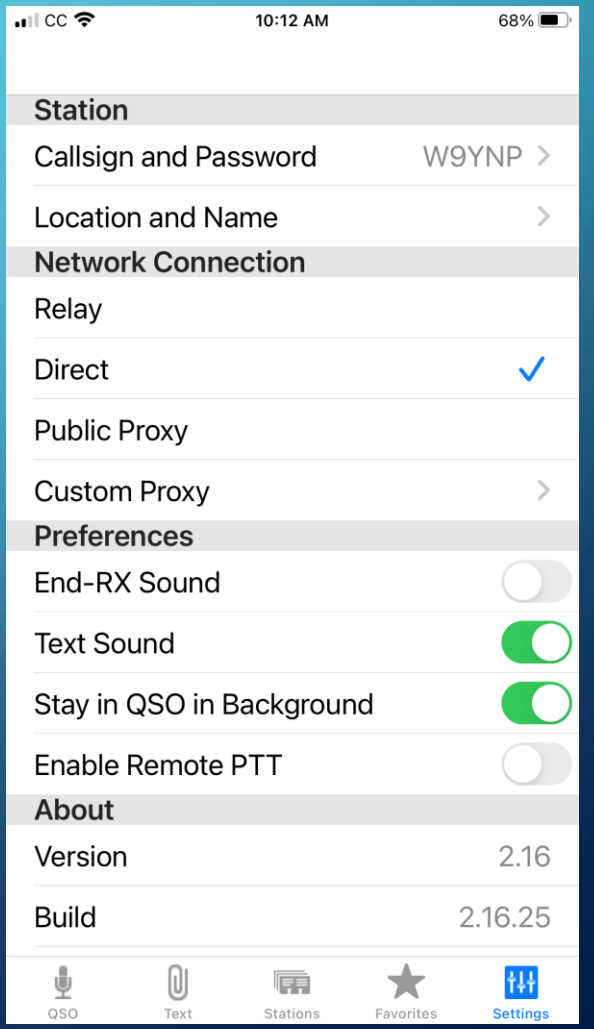
DIFFERENCES FROM THE REPEATER DOWN THE DIAL

- We are not running the official Echolink software so it works a little different.
- When you connect the “connection” message is only sent to the repeater transmitter.
- When you transmit and unkey the 'K' courtesy tone is sent out over the repeater transmitter but no tone is sent to Echolink.
- When an RF user unkeys the normal courtesy tone is sent to the repeater transmitter but the ‘K’ courtesy tone is sent to Echolink.

WHY DOESN'T THE REPEATER ANNOUNCE MY CALL

- You connected using a Relay or Proxy
- Ports 5198 and 5199 are blocked by your router





HOW DO I USE ALLSTARLINK

- Buy or build your own node

Clearnode - https://www.node-ventures.com/

Shari node - https://kitsforhams.com/

Build your own - https://allstarsetup.com/modify-the-baofeng-888s-for-allstar/

Connect with your Smart Phone

iPhone - Repeater Phone

Android – DVSwitch mobile

QUESTIONS