



# **ALLSTAR – INTERNET LINKING FOR ANALOG RADIOS & MORE**

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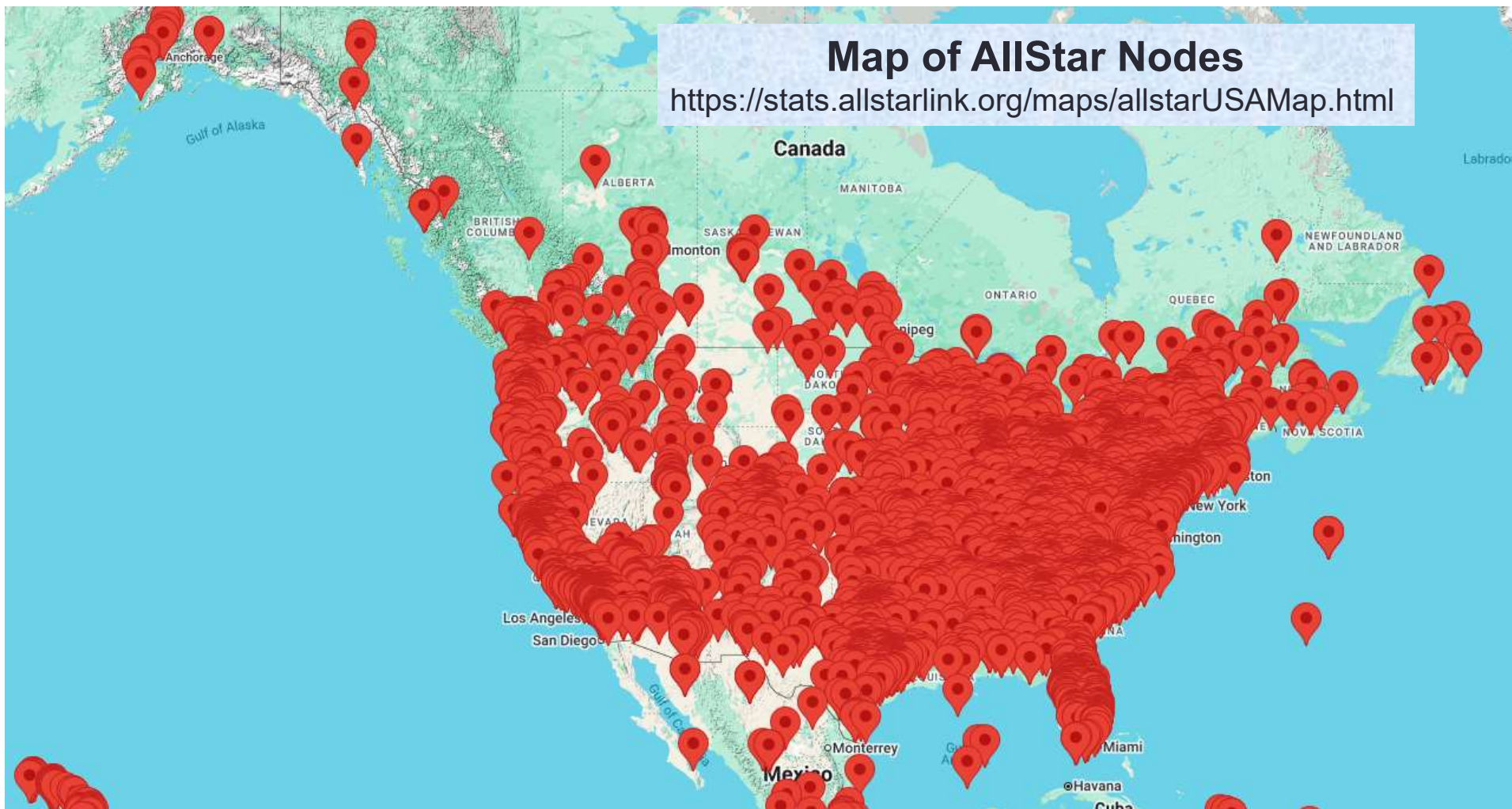
George Schindler, WBØIIS  
ARRL Technical Specialist - Missouri  
SLSRC Technical Committee  
President – Missouri Digital Group

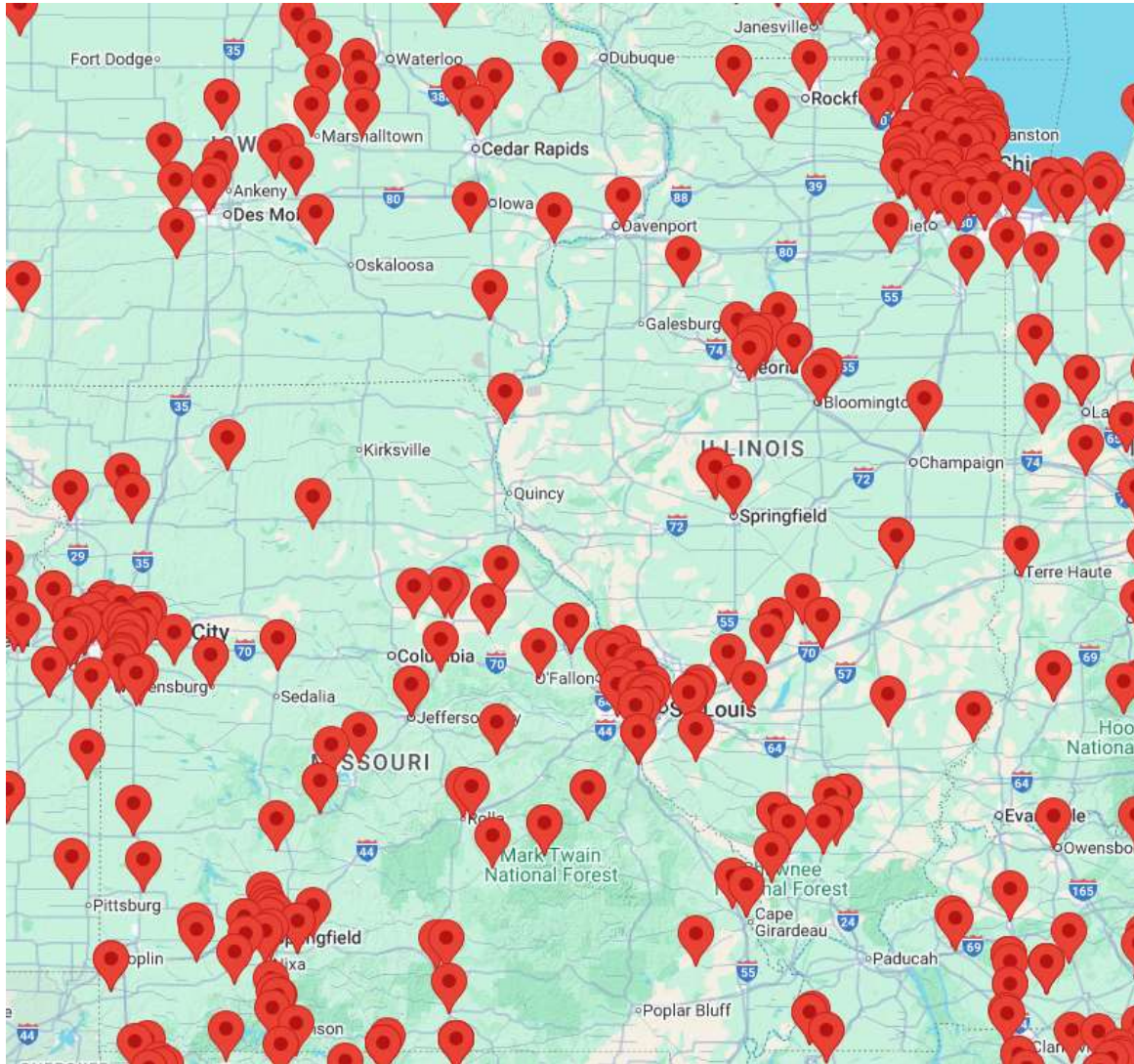
# What is AllStar Link

- An Internet VoIP Linking System that networks repeaters and simplex nodes
- AllStarLink has **42266** users and **44533** nodes worldwide
- It is based upon the open-source Asterisk PBX software
- Uses analog FM radios for access and for nodes
- Also supports Echolink and can be configured for both an AllStar and Echolink node
- All a **User** needs is a FM radio with the ability to send DTMF tones
- You don't need to be registered as a User (unlike some of the digital modes)
- There are two “flavors” of AllStar software on the network
  - HamVoIP – based upon Arch Linux, Asterisk
  - ALS3 – based upon Debian (Raspbian) Linux, Asterisk
  - Both Fully compatible with each other

# Map of AllStar Nodes

<https://stats.allstarlink.org/maps/allstarUSAMap.html>







## Missouri & Illinois Nodes

Hover or click cursor  
over node for Info

# Finding a Node - <https://allstarlink.org/nodelist/>

 [About](#) [Help/Support](#) [Lists & Stats](#) [Login/Sign Up](#)  [Donate](#)

## Searchable Node List

Last seen within 180 days

**Node Status**  
📶 - Online  
📴 - Offline

**Via Webtransceiver**  
📱 - Available  
📴 - Unavailable

**Via Phone Portal**  
📞 - Available  
📴 - Unavailable

wb0iis

Showing 1 to 1 of 1 rows

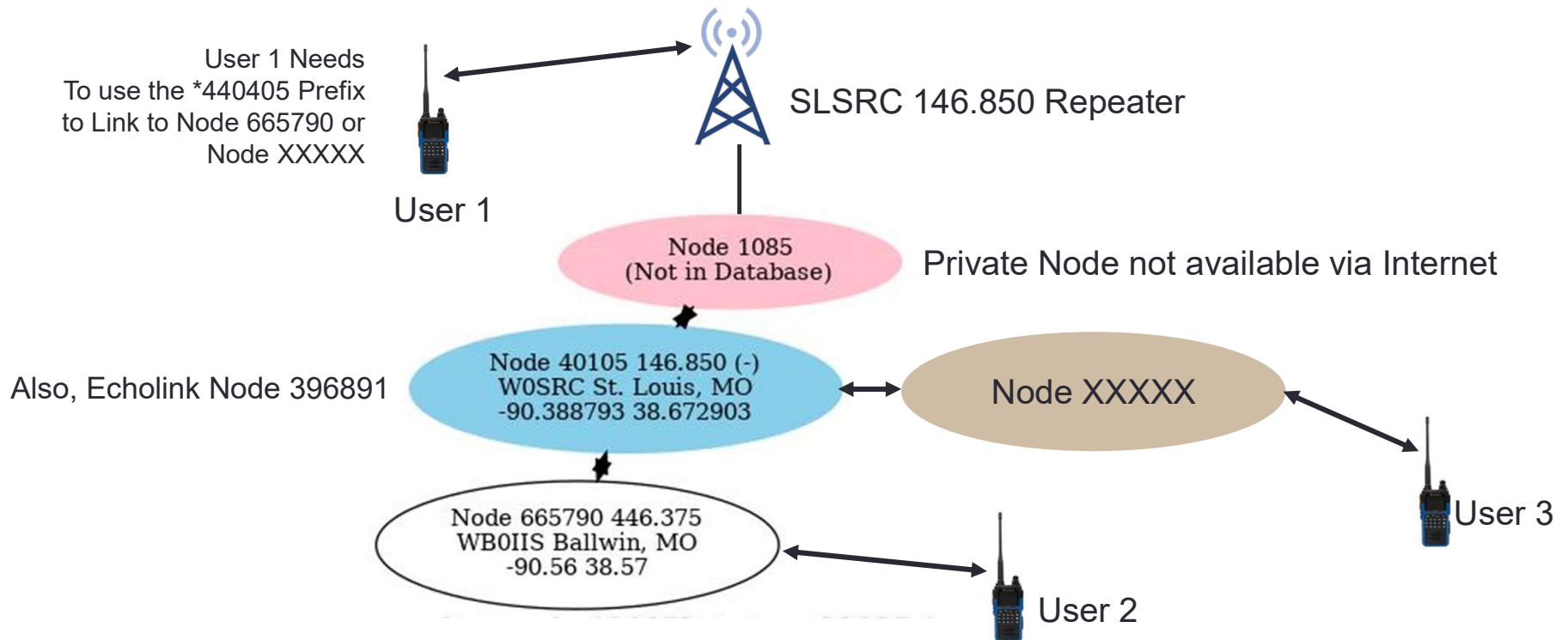
Node #	Owner	Callsign	Freq	Tone	Location	Site	Affiliation	Last Seen	Features
📶 <a href="#">665790</a>	WB0IIS	WB0IIS	446.375	141.3	Ballwin, MO			2025-12-23 13:30	📱 📴

Showing 1 to 2 of 2 rows

Node #	Owner	Callsign	Freq	Tone	Location	Site	Affiliation	Last Seen	Features
📶 <a href="#">40105</a>	W0SRC	W0SRC	146.850 (-)	141.3	St. Louis, MO	W0SRC Echolink	St. Louis Suburban Radio Club	2025-12-23 13:31	📱 📴
📶 <a href="#">494850</a>	W0SRC	W0SRC			St. Louis, MO	W0SRC HUB	St. Louis & Suburban Radio Clu	2025-12-23 13:33	📱 📴

Showing 1 to 2 of 2 rows

# How it Works



# Basic AllStar DTMF Linking Commands

- All commands begin with an \*
- **\*1 <Node Number>** Disconnects Link to another node, if no node number, disconnects all links
- **\*3 <Node Number>** Connects a link to another node in transceive mode
- **\*4 <Node Number>** Enter command mode on a remote node
  - Example – I am on Node X linked to Node 40105
  - \*440105\*3665790 Links 40105 to 665790
  - Send # to exit command mode, and restore local command decoding
  - Need to use this command on the SLSRC 85 Repeater
- **\*70** Local connection status, lets you know if node is linked to another
- **\*33 <EchoLink Node Number>** connects to a EchoLink node
  - For EchoLink Node Numbers that are 4 or 5 digits, prepend with 0, e.g. 001234

# Some Nodes a Have a Supermon Web Page

**W0SRC - Supermon 6.2+ AllStar Monitor**  
Login  
**St. Louis, MO**  
**SLSRC AllStar Echolink Node**

[40105](#) [1085](#) [494850](#) [All Nodes](#) [AllStar Status](#) [IsNodes](#) [HAMVOIP](#)

Display Configuration [ CPU: **110°F, 43.5°C** @ 18:43 ]  
[ Weather conditions for St. Louis, MO 63132: [No Report](#) ]

**Node [40105](#) => W0SRC 146.850 (-) St. Louis, MO** [Bubble Chart](#) [IsNodes](#)

Node	Node Information	Received	Link	Direction	Connected	Mode
<b>40105</b>	<b>Idle</b>					
1085	W0SRC 146.850 Repeater St. Louis	000:27:21	ESTABLISHED	OUT	15:43:10	Transceive
61118	KE0FCG Ballwin, MO	Never	ESTABLISHED	IN	15:43:10	Transceive
661890	KB0IAN 434.500 O'Fallon, MO	Never	ESTABLISHED	IN	15:43:10	Transceive
665790	WB0IIS 446.375 Ballwin, MO	Never	ESTABLISHED	IN	00:01:20	Transceive

System maintained by: *St. Louis Suburban Radio Club, W0SRC*

<http://85repeater.w0src.org:40105/supermon/link.php?nodes=40105>

# How to setup an AllStar Node

- You need to register with AllStarLink.org if you are going to setup your own node
  - Setup a server under your call
  - Request a node number
  - You get one node number, but you can turn into up to 10 using NNX (**N**ode **N**umber **eX**tension)
- Hardware Needed
  - Raspberry Pi 3B+ or newer and a SD Card
  - A USB Radio Interface, a.k.a. URI
    - Allscan URI, DigiRig and more
  - An FM radio with access to TX and RX audio, COS, and PTT
    - Can be either a mobile or HT
- An alternative is a Pi Hat with the URI and low power radio together
  - ShariPI, HotspotRadio and others

## WB0IIS Nodes

Click a node number below to edit it.

Node Number	Server	Callsign	Password	Registered	Web Xceiver	Show Cmds	Rvrs Ap	Phone Portal	Rmt Base	Agile	NNX
<a href="#">665790</a>	WB0IIS	WB0IIS	<input type="button" value="Show"/>	Yes	Yes	No	No	Yes	No	No	Yes
<a href="#">665791</a>	WB0IIS2	WB0IIS	<input type="button" value="Show"/>	Yes	Yes	No	No	Yes	No	No	Yes

Click on Node Management to:

- Request a new node number from AllStarLink.
- Extend a node number up to 10 nodes.
- Delete a node number.

[Node Management](#)

Note: You do not need to request a second node until you have used the first one above.

**Hint:** A "Node" is the AllStarLink name for a particular connection that is analogous to a phone number. This number is what is used to connect to things and serves as an identifier on the AllStarLink network. One or more nodes are configured on a "Server" within Asterisk/app\_rpt.

**Original Node Number was 66579 now two with NNX**

**Will need password when configuring Node**

**Each node will need a sever when running on same Network**

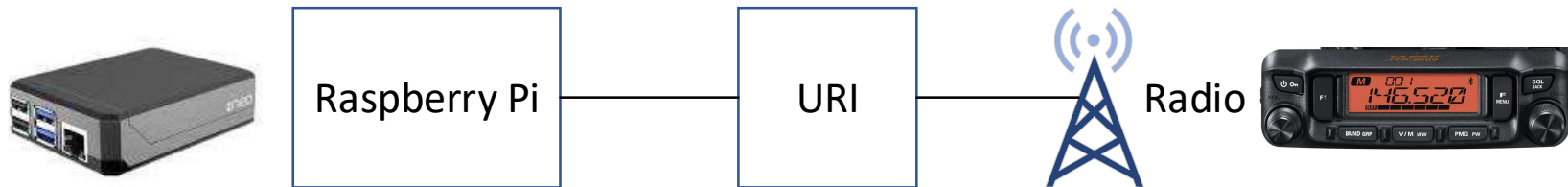
## WB0IIS Servers

Name	Location	Site	Actions
<a href="#">WB0IIS</a>	Ballwin, MO		<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<a href="#">WB0IIS2</a>	Anywhere		<input type="button" value="Edit"/> <input type="button" value="Delete"/>

[Add New Server](#)

**Hint:** A "Server" is the AllStarLink name for the computer that is running the operating system and Asterisk + app\_rpt. One or more nodes are located on and configured upon a "Server".

# Hardware Configurations



AllScan URI101



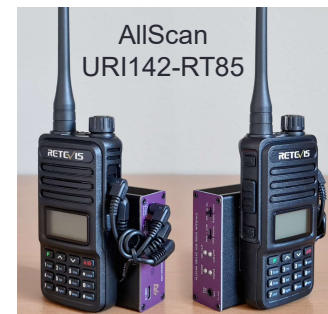
HotSpotRadio



Shari Pi



ClearNode



AllScan  
URI142-RT85



HotSpotRadio-USB

# Configuring Your Own Node

- Review videos and AllStar manual before getting started
- After you download the image (ASL or HamVoIP), burn it to a SD Card
  - If ASL3, use RaspberryPi imager and enter Logon Credentials and WiFi before burning image
- Install the card
- Boot up the Raspberry Pi
- Logon to the Pi
- Use the ASL-Menu to configure your node

There are a lot of good YouTube videos on how to configure an AllStar Node. I like the ones from KD5FMU – Ham Radio Crusader.

Here is his on ASL3 Setup – <https://www.youtube.com/watch?v=a3gRVpHd2tk>

# ASL 3.0 Landing Page



AllStarLink 3



### Prefer SSH?

As always, use of SSH is available by SSHing to 192.168.100.163 using your favorite terminal or SSH client. A web-based SSH client is available within the Web Admin Portal.

[AllStarLink Site](#)

[AllStarLink Forum](#)

[AllStarLink @ GitHub](#)

### Love using AllStarLink?

The implementation and upkeep of this system is very costly. All software used by AllStarLink is open source and developed by volunteers to be freely available and used by the amateur radio community. Any monetary help you give will be much appreciated.

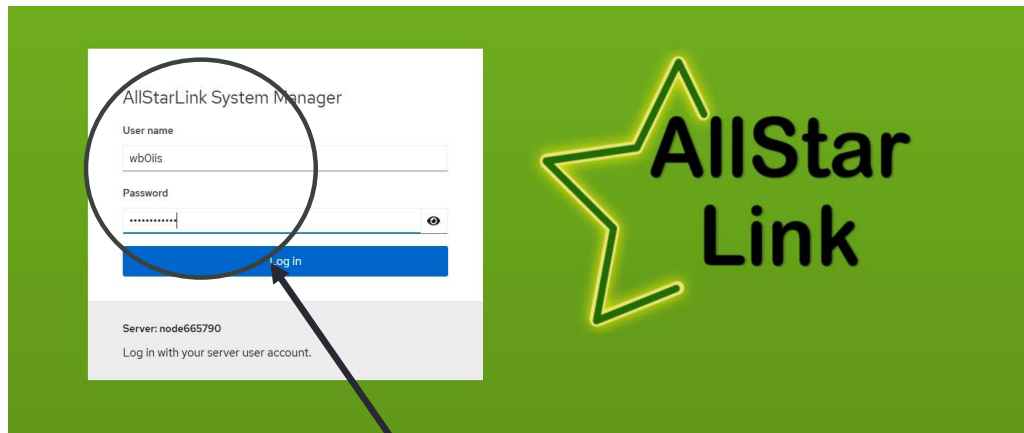
Allstarlink Inc. is a US 501(c)(3) non-profit organization.

[Securely Donate](#)

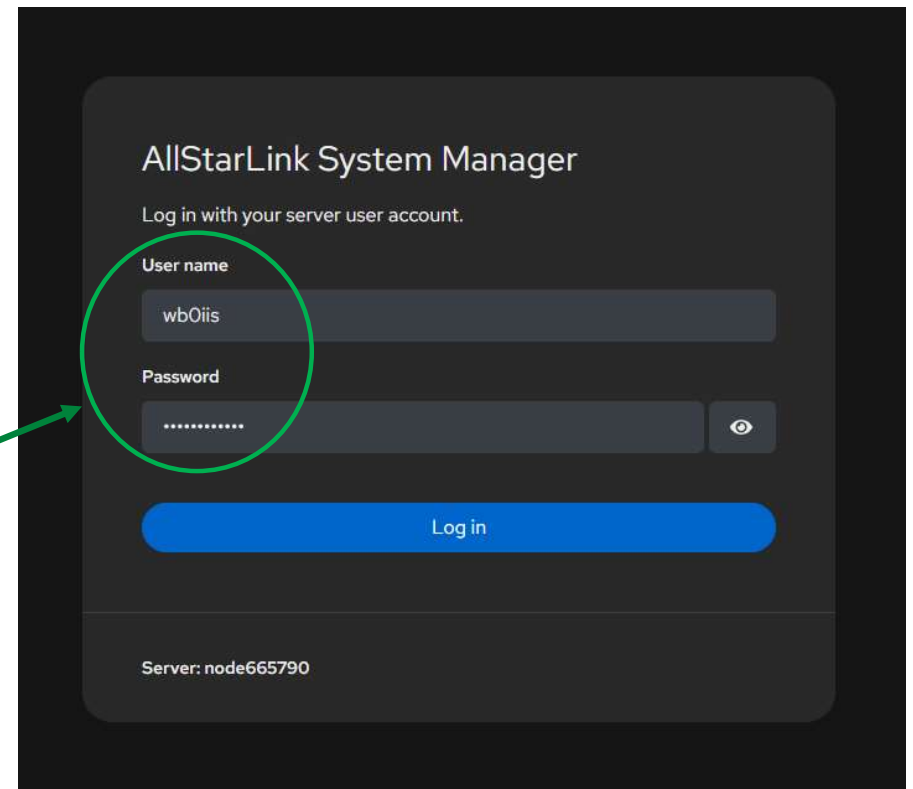
AllStarLink 3 Appliance - All source code is available under terms of various open source licenses including the GPL, AGPLv3, and BSD licenses.

## Web Admin Portal Logon

Version 19 on Bookworm



Version 22 on Trixie



Raspberry Pi Account  
Information setup when  
creating image

# Web Admin Portal

wb0iis@ node665790

Administrative access Help Session

node665790 running Debian GNU/Linux 12 (bookworm) Reboot

### Welcome to AllStarLink v3


- \* A CLI menu is accessible by typing 'sudo asl-menu'
- \* The Asterisk CLI is accessible by typing 'sudo asterisk -rv'
- \* An online manual is located at <https://allstarlink.github.io>
- \* Package updates are obtained through the Cockpit web console or by typing 'sudo apt update && sudo apt upgrade -y'
- \* This system uses firewalld. Ports are controlled in the Cockpit web console or by using the command:  
'sudo firewall-cmd -p PORT:TYPE'
- \* For help, visit <https://community.allstarlink.org>


### Health

✔ System is up to date

Last successful login: Dec 12, 04:08 PM  
from ::ffff:192.168.100.247 on web console  
[View login history](#)

### Usage

CPU  5% of 4 CPUs

Memory  0.41 / 1.8 GiB

[View metrics and history](#)

### System information

Model	Raspberry Pi 4 Model B Rev 1.1
Asset tag	100000003e35286f
Machine ID	baae6ec2ad784582896e2c69786ad859

### Configuration

Hostname	node665790 <a href="#">edit</a>
System time	Dec 29, 2025, 1:07 PM ⓘ
Domain	<a href="#">Join domain</a>

Search

System

Overview

Logs

Storage

Networking

Accounts

Services

Tools

Applications

Diagnostic reports

Software updates

Terminal

WiFi manager

wb0iis@node665790

Administrative access Help Session

Search

wb0iis@node665790: ~

Font size 16 Appearance Black Reset

wb0iis@node665790:~\$ sudo asl-menu

System

Overview

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AllStarLink 3.6.3

AllStarLink Main Menu

- 1 Node Settings
- 2 Enter a bash shell as root
- 3 Enter the Asterisk CLI
- 4 Show System Version Numbers
- 5 Diagnostics Menu
- 6 Expert Configuration Menu
- 7 Logout/Reboot/Shutdown
- 8 Enable/disable ASL Menu at login
- B Backup and Restore Menu
- I Information and help text

<Select> <Exit Main Menu>

# Node Links – Allmon3 Dashboard

The screenshot displays the Allmon3 Monitoring Dashboard interface. On the left is a sidebar with navigation buttons for Home, 665790, and Logout, along with the AllStar Link logo and version information (Allmon v3 1.6.1). The main content area shows the selected node: 665790 - WB0IIS 446.375 Ballwin, MO. It indicates 1 connection and is up for 16 days, 21 hours, and 59 minutes. A status bar shows 'Transmit - Idle'. Below this is a table with one entry for node 40105, which is a WOSRC at 146.850 (-) St. Louis, MO. The table columns are Node, Description, Last Recv, Conn Time, Direction, Connect State, and Mode. At the bottom of the dashboard, there is a copyright notice for 2023-2024 AllStarLink and a reference to the AGPLv3 license.

Node	Description	Last Recv	Conn Time	Direction	Connect State	Mode
40105	WOSRC 146.850 (-) St. Louis, MO	Never	00:00:48	OUT	ESTABLISHED	Transceive

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Allmon3 is distributed under the terms of the [AGPLv3](#)

**Use Dashboard to:  
Link/Unlink Node  
Execute System Commands**

## Additional Setup Information

- AllStar has a simple echo function, need to activate COP commands or use CLI Tune Menu
- There is a Super Parrot Node, 55553, to help set level into the network from your node
- Evoke the CLI Tune Menu with “*sudo simpleusb-tune-menu*” from the command line (saves navigating the menu each time to make adjustments)
- With Version 22 on Trixe, you have customizations to setup the node some of the hotspot equipment.

# Customizations for Hardware

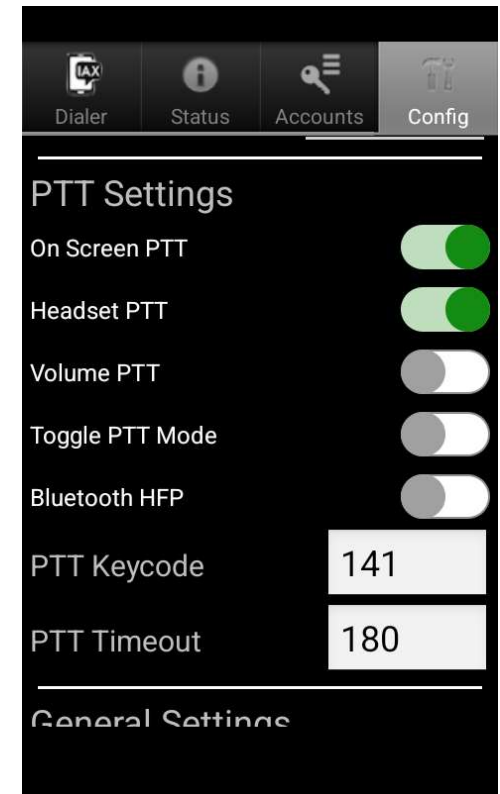
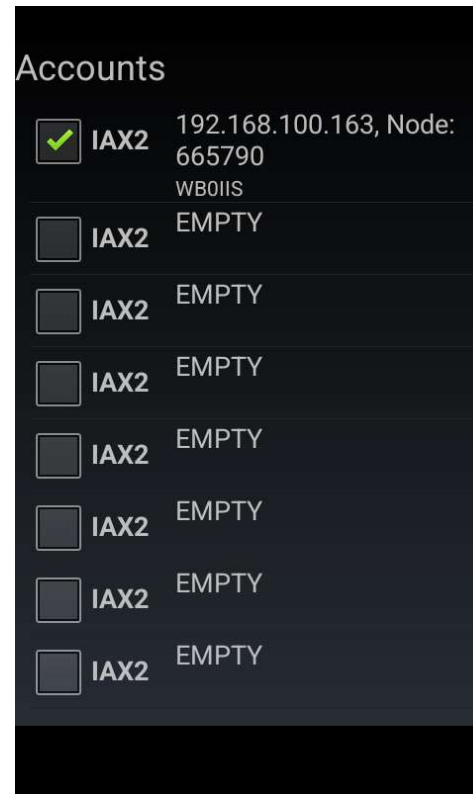
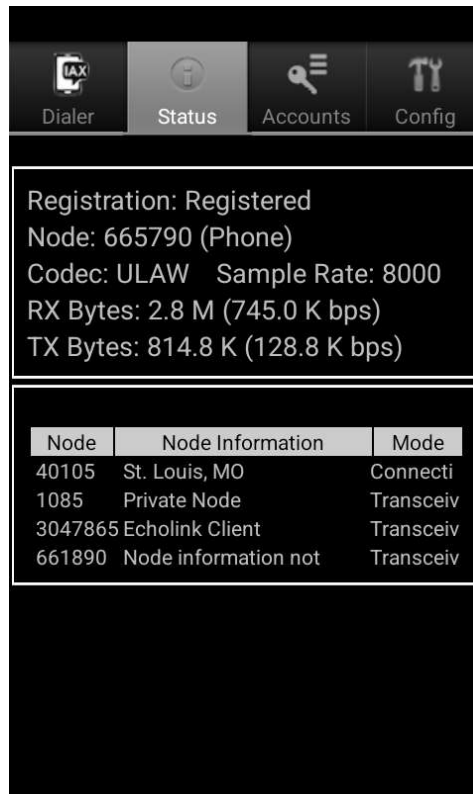
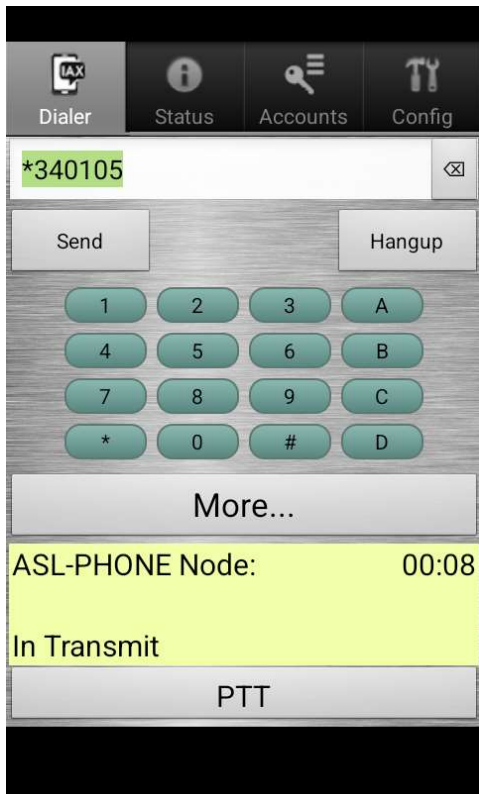
```
AllStarLink 3.6.3
Select the customization(s) to enable (use tab and arrow keys to scroll, space bar to
select/deselect)

[ ] *AllScan* UCI
[ ] *HotSpotRadio* HSR-Repeater
[ ] *HotSpotRadio* HSR-USB
[ ] *HotSpotRadio* PiHat
[ ] *Kits4Hams* SHARI PiHat, PiZero
[ ] *Kits4Hams* SHARI PiXX
[ ] Archive Audio Frames (note: monitor disk usage)
[ ] Assert GPIO (pin 1) when audio clipped
[ ] Assert GPIO pin 4 when keyed (COS LED)
[ ] Assert GPIO pin 8 when keyed (COS LED)
[ ] Hotspot Wait Times
```

# DVSwitch – The Digital Connection

- **DVSwitch** is a set of tools and programs that allow Internet access via web transceiver and can provide FM cross mode access to DMR, D-STAR, Fusion, P25 and NXDN via AllStar
- **DVSwitch Mobile** is an android app (Google Play Store) that allows you to access your AllStar Node from a tablet, cell phone or other device via the Internet or your LAN (do not need DVSwitch Server to access node)
- **DVSwitch Server** is a program that can run on a RaspberryPi and provides the interconnection to DMR, NXDN, YSF, P25 and D-STAR.
  - D-Star requires a hardware vocoder such as a Northwest Digital ThumbDV
- For more Information view some of the KD5FMU YouTube videos
- There is also a Groups.io and installation instructions can be found at [https://dvswitch.org/DVSwitch\\_install.pdf](https://dvswitch.org/DVSwitch_install.pdf)

# DVSwitch Mobile Screen Shots



## Links for Further Investigation

- <https://www.allstarlink.org/> – AllStarLink website, go here to search for nodes and to sign up for a AllStar Node number
- <https://allstarlink.github.io/> – AllStarLink GitHub, go here for instructions on how to setup a node and download image
- <https://hamvoip.org/> – HamVoIP website for info and downloading image
- <https://www.youtube.com/@HamRadioCrusader> – KD5FMU, Freddie Mac's YouTube channel, numerous AllStar Videos, DVSwitch Mobile Videos, DVSwitch Server Videos and more

## Links to Equipment

- AllScan – <https://allscan.info/>
- ClearNode – <https://www.node-ventures.com/>
- HotSpot Radios – <https://hotspotradios.com/>
- Shari Pi Hat – <https://kits4hams.com/shari-pihat>

# Questions?

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Presentation will be posted at  
<https://modigitalgroup.org/learning-center/>