

# AllStar & Amateur Radio

Rich - WA2ZPX & Joe - W3GMS

- AllStarLink is a network of Amateur Radio repeaters, remote base stations, and hot spots, accessible to each other using the internet for transport via Voice over Internet Protocol (VOIP)
- AllStar uses a program called Asterisk which is an open-source software program published by Digium.
- It started out as a PBX telephone program and was modified by Jim WB6NIL (SK) to run Linux on a desktop computer. It was later that Raspberry pi support was added.

- It provides direct amateur to amateur connection through nodes (Raspberry Pi and soundcard).
- Many Nodes can be connected together (bridged) or configured as point to point.
- A typical repeater node hardware wise consists of a Raspberry Pi and a special sound card which delivers COS and PTT signals.
- Simplest integration into a repeater is through a multi port repeater controller.

- Programming of the Raspberry Pi resides on a micro SD card that plugs into the pi.
- AllStar audio quality is the best of the VOIP modes because it uses the Ulaw codec which uses slightly more bandwidth.

# How it works

- When the Raspberry pi boots up, it sends an authentication request to the server. The server checks to see if the password matches the password that is assigned in the portal.
- At the same time that the Pi authenticates, it records the nodes IP address, and sends a list to all the other nodes every 20 minutes or so.
- When a call is initiated by the node, it looks up the ip of the called node, and sends the connect protocol, and port information, and connects to the node.

# DMK - UR1XB 9180B

Audio In & Out plus COS & PTT



[https://dmkeng.com/index.php?route=product/product&product\\_id=52](https://dmkeng.com/index.php?route=product/product&product_id=52)







DMK

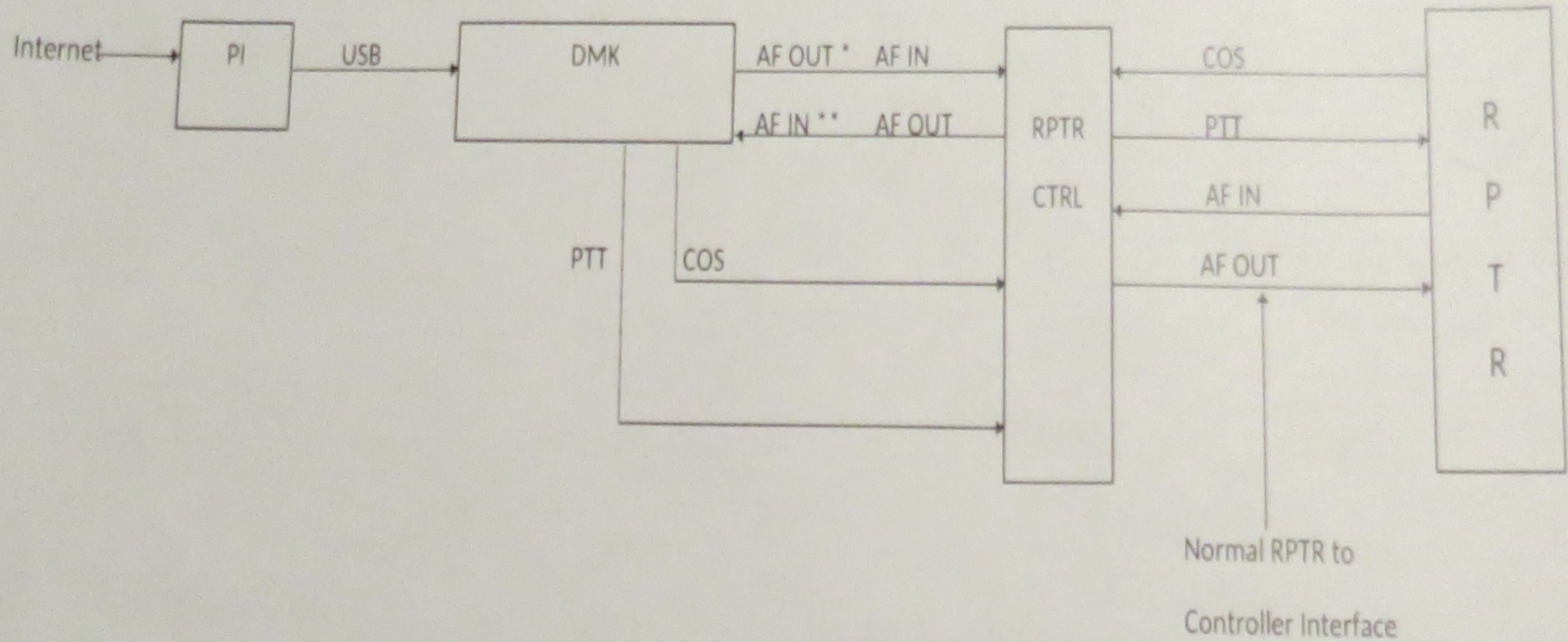
USB Radio Interface

[www.dmkeng.com](http://www.dmkeng.com)

URiXB

USB

Speaker



NOTE:

\* AF OUT MUST BE PRE-EMPHASIZED PRIOR TO TX OVER AIR

\*\* AF IN MUST BE DE-EMPHASIZED PRIOR TO GOING INTO INTERNET



# Hot Spot Nodes

- A hotspot node consists of a raspberry pi and an RF radio board built into a single case, or an additional box that plugs into the pi using the usb connector. It connects to the internet either by the ethernet port on the pi, or wifi.
- There are two manufacturers that build hotspot nodes. Node Ventures (clear node), and Kits for Hams. They both have various models available.











# Cellphone Node

- For iphone users, there is an app available in the app store for \$7.99 called repeaterphone. It acts like a node, and will allow you to connect to other nodes and repeaters, with your cellphone (you need to register on the Allstar web site of it to work ) (Authentication).

# Programming / Firmware Details for AllStar

- You will first have to register for a node at Allstarlink.org.
- The Pi operating system runs on Arch Linux.
- The software build can be found at [www.hamvoip.org](http://www.hamvoip.org)
- All the tools to work with it and copy it are included in the download. i.e Putty, WinScp, and Win32diskimager.
- You use a windows computer to download the image, then copy the image to a micro SD card. You will need an SD card reader/writer. (Amazon\$10)

- Once the image is transferred to the SD card, you place the SD card in the Pi and power it up.
- You will need an HDMI monitor, cable, and keyboard to start.
- Once booted the software will guide you through the setup. You will need your password and port number from the Allstar Portal.
- After the initial setup, the node can be managed through a windows computer.
- The installation instructions can be found at [www.hamvoip.com](http://www.hamvoip.com)

# Node Management

- There is a program built in the Node called Supermon. It uses a standard web browser to access it.
- Supermon will allow you to have a visual of your node and see who is connected, connect and disconnect nodes, gives you the ability to view your configuration files, as well as other management functions.



# Supermon

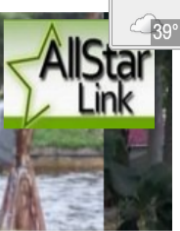
WA2ZPX - Supermon 7.2+ (HV) AllStar Manager

Logout

Slate Hill, NY  
RPi4 Node

AllStar/Echolink System Manager

511722 IsNodes HAMVOIP 442.850+ Mhz PL 123.0



Permanent

Local and Remote Control:

Connect Disconnect Monitor Local Monitor DTMF Lookup Rpt Stats Bubble Chart Control Favorites

Local Control Only:

Configuration Editor Iax/Rpt/DP RELOAD AST START AST STOP RESTART Server REBOOT SW Update?

AllStar How To's AllStar Wiki CPU Status AllStar Status Node Info Active Nodes All Nodes

GPIO Linux Log AST Log Connection Log Web Access Log Web Error Log Restrict

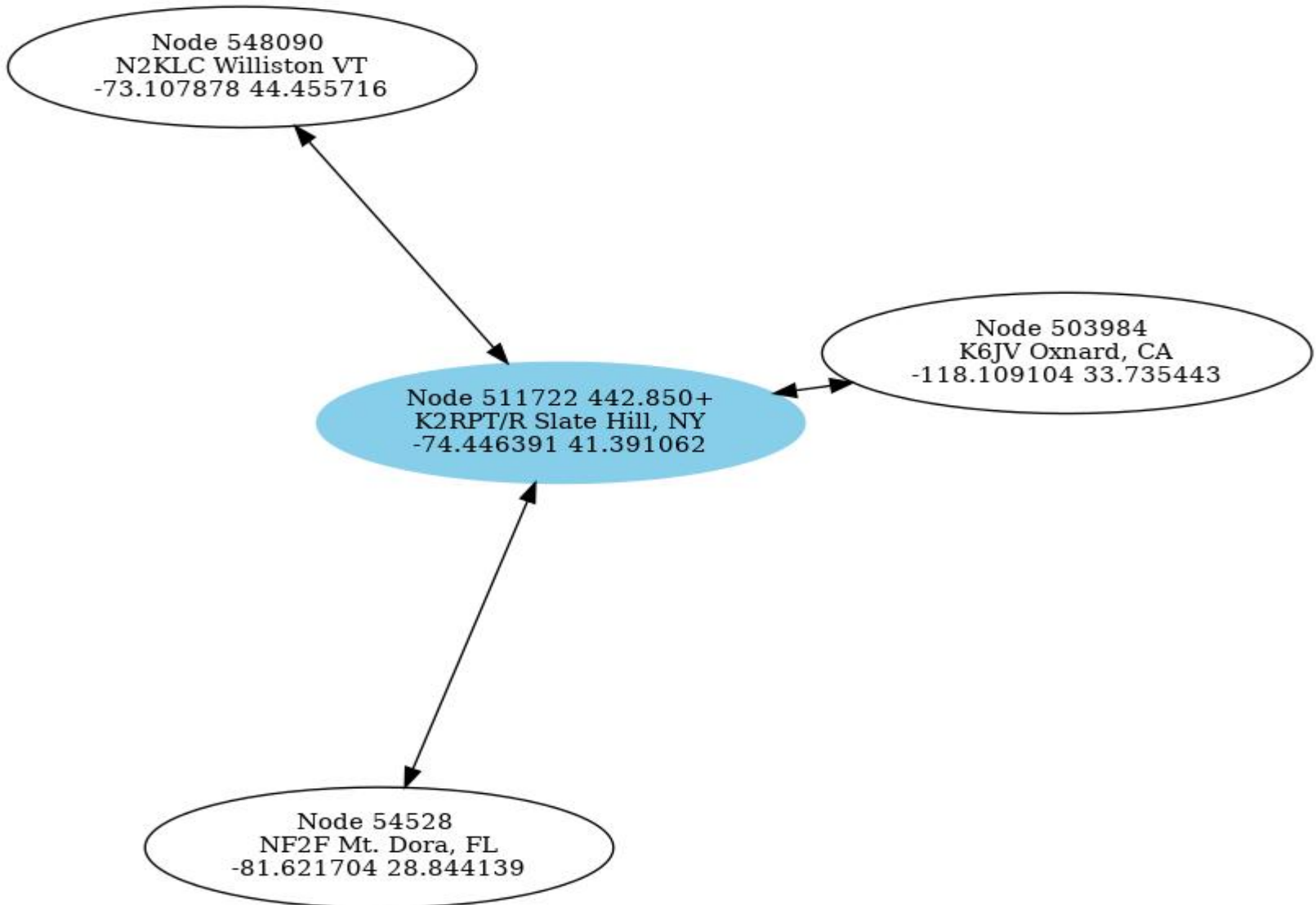
[ WA2ZPX-511722 ] [ WAN: [98.15.202.244](#) ] [ LAN: 192.168.1.175 ] [ WebP: 8550 ] [ AstP: 4569 ] [ MgrP: 5038 ] [ SShP: 10400 ]  
[ Tuesday, December 6, 2022 EST 12:46:32 up 74 days, 16:27, 0 users, load average: 0.12, 0.06, 0.01 ]

Support Display Configuration [ CPU: 95°F, 35.0°C @ 12:46 ]

[ Weather conditions for Slate Hill, NY - 10973: 41°F, 5.0°C / Cloudy ]

Node <a href="#">511722</a> => K2RPT/R 442.850+ Slate Hill, NY <a href="#">Bubble Chart</a> <a href="#">LsNodes</a>						
Node	Node Information	Received	Link	Direction	Connected	Mode
<b>511722</b>	<b>Idle</b>					
503984	K6JV Oxnard, CA	002:21:27	ESTABLISHED	IN	24:24:30	Transceive
548092	N2KLC Williston VT / Middletown NY	002:26:31	ESTABLISHED	IN	35:36:08	Transceive
548090	N2KLC Williston VT	098:07:29	ESTABLISHED	IN	273:04:02	Transceive
54528	NF2F Mt. Dora, FL	Never	ESTABLISHED	IN	32:57:51	Transceive

# Bubble Chart



AllStarLink [surrounding node 511722] status of 2022-12-27 16:04:27



# Node 511722

K2RPT/R Slate Hill, NY

[Click here for the Bubble Chart](#)

Node	Callsign	Frequency	CTCSS	Location
<a href="#">503984</a>	K6JV			Oxnard, CA
<a href="#">54528</a>	NF2F			Mt. Dora, FL
<a href="#">548090</a>	N2KLC			Williston VT

## Statistics

<b>Actual Uptime</b>	95d 14hr 42m 22s
<b>Keyups</b>	5040
<b>Transmit Time</b>	9hr 11m 53s
<b>Timeouts</b>	0
<b>Commands Executed</b>	40