

AllStar Presentation

Compiled by Dr. Greg C. Meador, A15HV@arrl.net -- July 2023

What is AllStar ?

AllStarLink is a network of Amateur Radio repeaters, remote base stations and hot spots accessible to each other via Voice over Internet Protocol. AllStarLink runs on a dedicated computer (including the Raspberry Pi) that you host at your home, radio site or computer center. It is based on the open source Asterisk PBX running our app_rpt application. App_rpt makes Asterisk a powerful system capable of controlling one or more radios. It provides linking of these radio "nodes" to other systems of similar construction anywhere in the world via VoIP.

AllStarLink's primary use is as a dedicated computer node wired to your repeater or radio. Connections from Echolink, other VoIP clients and telephone calls are supported.

<https://www.allstarlink.org/>

Why would I use AllStar as opposed to EchoLink, DMR, DStar, WiresX, System Fusion, etc ?

1. **EchoLink** is a computer-based Amateur Radio system distributed free of charge that allows [radio amateurs](#) to communicate with other amateur radio operators using [Voice over IP](#) (VoIP) technology on the [Internet](#) for at least part of the path between them. It was designed by Jonathan Taylor, a radio amateur with [call sign](#) K1RFD. <https://en.wikipedia.org/wiki/EchoLink>
2. **Digital mobile radio (DMR)** is a [digital radio standard](#) for voice and data transmission in non-public [radio networks](#). It was created by the [European Telecommunications Standards Institute](#) (ETSI),^[1] and is designed to be low-cost and easy to use. DMR, along with [P25 phase II](#) and [NXDN](#) are the main competitor technologies https://en.wikipedia.org/wiki/Digital_mobile_radio
3. **D-STAR (Digital Smart Technologies for Amateur Radio)** is a digital voice and data protocol specification for [amateur radio](#). The system was developed in the late 1990s by the [Japan Amateur Radio League](#) and uses [minimum-shift keying](#) in its [packet](#)-based standard. There are other digital modes that have been adapted for use by amateurs, but D-STAR was the first that was designed specifically for amateur radio. <https://en.wikipedia.org/wiki/D-STAR>
4. **Wide-coverage Internet Repeater Enhancement System (WIRES)** is a *de facto* standard created by [Yaesu](#) designed to link compatible [amateur radio repeaters](#) over [Voice over IP](#), allowing any home stations using those repeaters to communicate with each other over VoIP.
5. WIRES uses [DTMF](#) signaling to make a connection over the [Internet](#) from a repeater or home station to another WIRES-equipped station that is accessible over the Internet. No proprietary tones or connection formats are used, so any manufacturer's radio (equipped with a DTMF encoding keypad) may be used to bring up the Internet link. https://en.wikipedia.org/wiki/Wide-coverage_Internet_Repeater_Enhancement_System
6. **System Fusion** In 2013, YAESU launched its own digital mode of operation for [amateur radio](#): "System Fusion". Like other digital modes, Fusion utilize a narrower [radio bandwidth](#). With System Fusion, special attention was paid to compatibility with analog FM radio. This was intended to simplify migration of the existing amateur radio repeaters from analog to digital technology. [https://en.wikipedia.org/wiki/Yaesu_\(brand\)](https://en.wikipedia.org/wiki/Yaesu_(brand))
7. **M17** is a [digital radio modulation mode](#) developed by Wojciech Kaczmarski ([amateur radio call sign](#) SP5WWP) et al. ^{[1][2][3][4][5][6][7]} M17 is primarily designed for voice communications on [VHF amateur radio](#) band and above. [https://en.wikipedia.org/wiki/M17_\(amateur_radio\)](https://en.wikipedia.org/wiki/M17_(amateur_radio))
8. Use which ever of these modes has the most compatible resources with what you are trying to do.

AllStar Presentation

Compiled by Dr. Greg C. Meador, AI5HV@arrl.net -- July 2023

Running AllStar on a Windows or Mac computer (Reference: <https://appsplayground.com/all-star-pc/>) *I have not tested this.*

1. Download All Star PC for free at AppsPlayground. David.He published All Star for Android operating system mobile devices, but it is possible to download and install All Star for PC or Computer with operating systems such as Windows 7, 8, 8.1, 10 and Mac.
2. Let's find out the prerequisites to install All Star on Windows PC or MAC computer without much delay.
3. Select an Android emulator: There are many free and paid Android emulators available for PC and MAC, few of the popular ones are Bluestacks, Andy OS, Nox, MeMu and there are more you can find from Google.
 - a. <https://www.bluestacks.com/>
 - b. <https://andyroid.fileplanet.com/>
 - c. <https://www.bignox.com/>
 - d. <https://www.memuplay.com/>
4. Compatibility: Before downloading them take a look at the minimum system requirements to install the emulator on your PC.
5. For example, BlueStacks requires OS: Windows 10, Windows 8.1, Windows 8, Windows 7, Windows Vista SP2, Windows XP SP3 (32-bit only), Mac OS Sierra(10.12), High Sierra (10.13) and Mojave(10.14), 2-4GB of RAM, 4GB of disk space for storing Android apps/games, updated graphics drivers.
6. Finally, download and install the emulator which will work well with your PC's hardware/software.

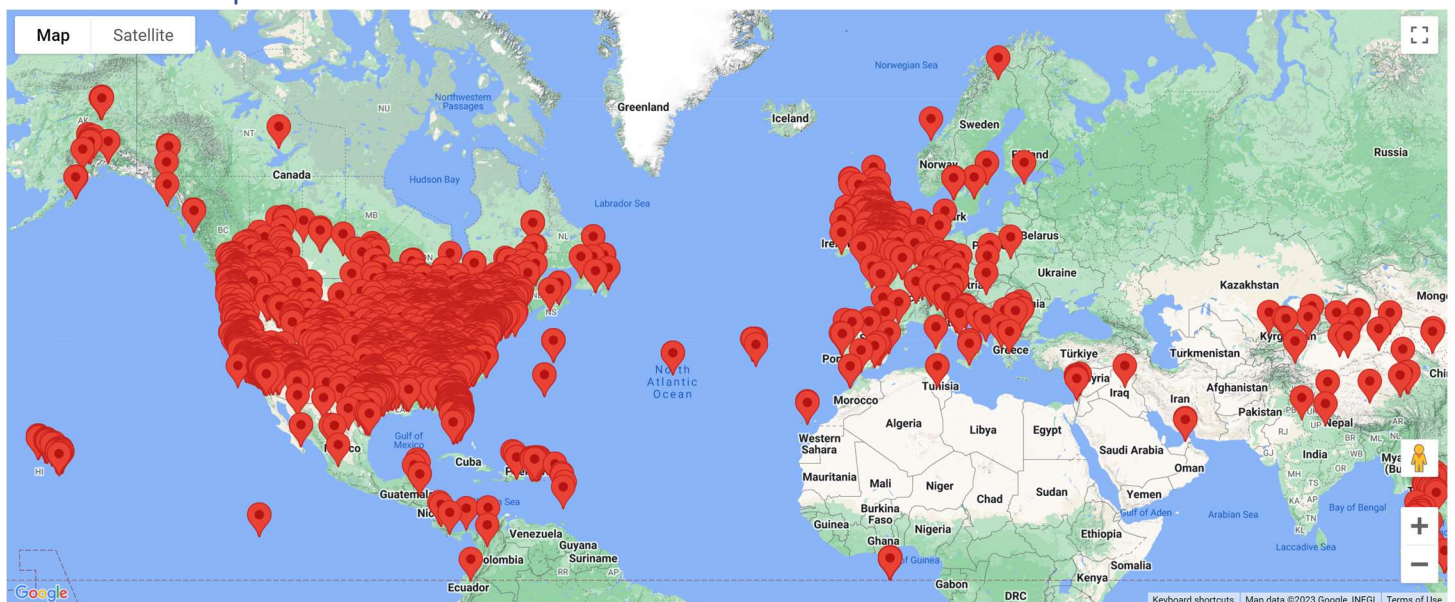
How to Download and Install All Star for PC or MAC:

- Open the emulator software from the start menu or desktop shortcut in your PC.
- Associate or set up your Google account with the emulator.
- You can either install the app from Google PlayStore inside the emulator or download All Star APK file and open the APK file with the emulator or drag the file into the emulator window to install All Star for PC.

You can follow above instructions to install All Star for PC with any of the Android emulators available.

Maps of active AllStar Nodes as of 07/23/2023

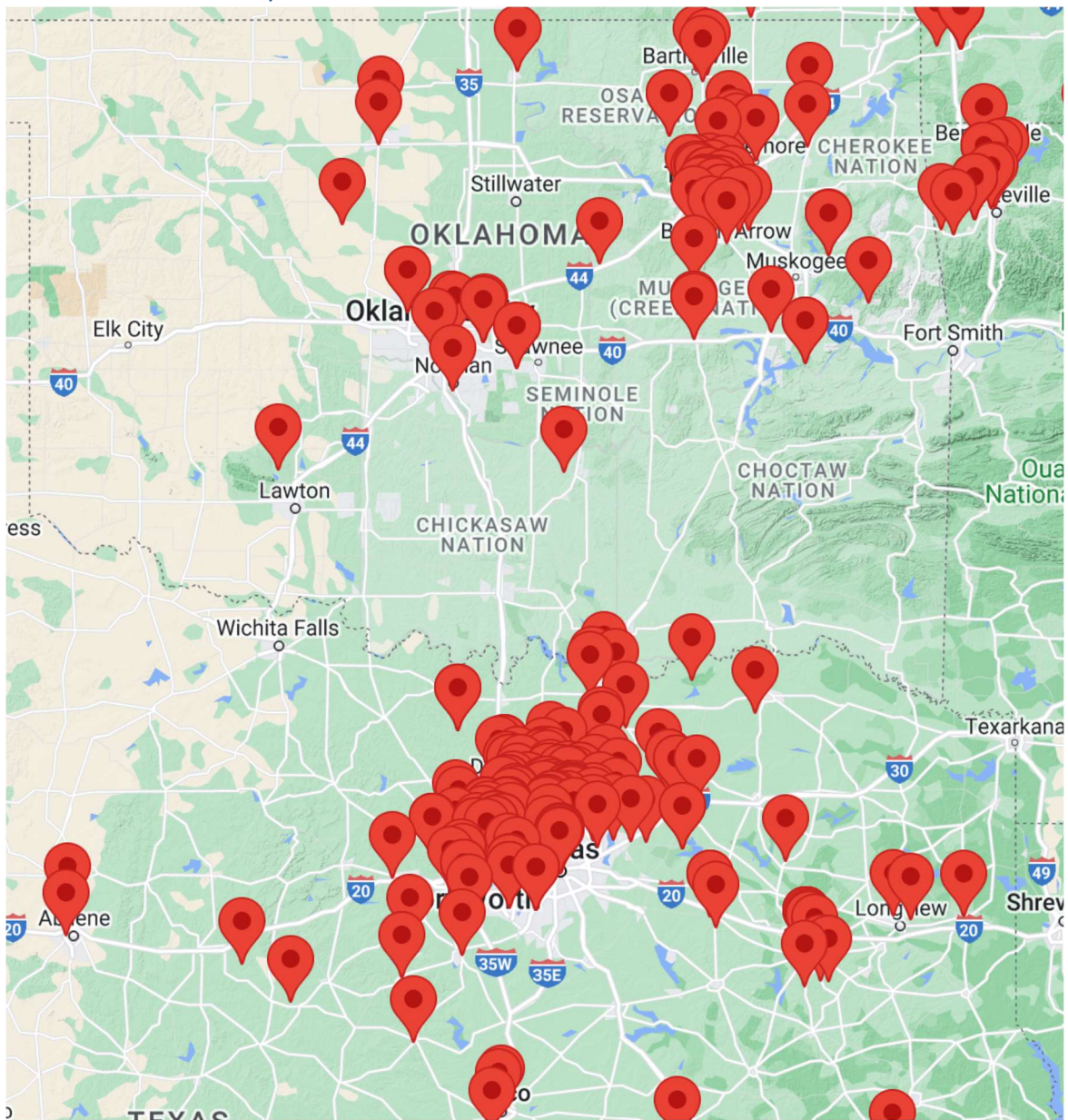
Northern Hemisphere



AllStar Presentation

Compiled by Dr. Greg C. Meador, AI5HV@arrl.net -- July 2023

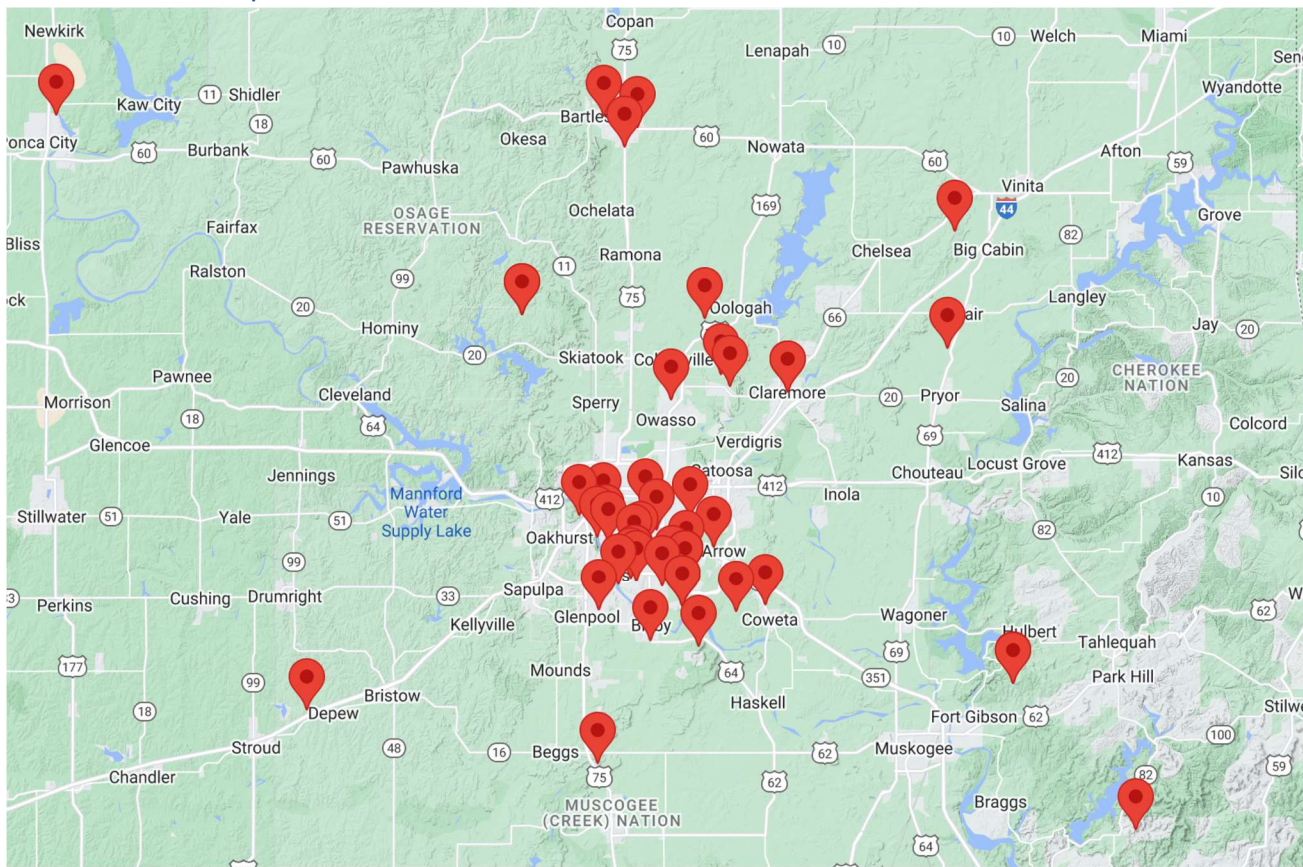
Oklahoma, Texas map



AllStar Presentation

Compiled by Dr. Greg C. Meador, AI5HV@arrl.net -- July 2023

NE Oklahoma map



What do I need to setup an AllStar node ?

1. Raspberry Pi 3 or 4. It is very difficult to find Raspberry Pi 3 kits any more. Here is what I bought my Raspberry Pi 4 kit. <https://www.pishop.us/product-category/raspberry-pi/raspberry-pi-kits/pi-4-b-kits/>
 - a. I bought the 4 GB start kit for \$109.95 as of 07/23/2023.
2. You will want a 16GB micro SD card and power supply. Do yourself a favor and get ones that are rated as Class 10 rated at 100MBps or faster. Here is what I bought. <https://www.amazon.com/gp/product/B07XKG1B7M/>
3. Your computer needs a micro SD slot, an SD slot with an adapter for micro SD to SD, or purchase a USB-A to micro SD adapter. <https://www.amazon.com/gp/product/B06ZYXR7DL/>
 - a. Depending on which Raspberry Pi kit you purchase and from where, it may come with a USB-A to micro SD adapter.
4. Do yourself a favor and do NOT order this SHARI device from Amazon. <https://www.amazon.com/gp/product/B09DCY98N2/> After 2 weeks working with the vendor, I could not get the unit to configure and work correctly so I sent it back.
5. SHARI device. Here is the link to where I bought my device from. <https://kitsforhams.com/>. After receiving the device it was configured and up and running in <1 hour.
 - a. **SHARI** (SA818 Ham Allstar Radio Interface) is a ham construction project that implements a Raspberry Pi hosted Allstar node using a NiceRF SA818 embedded UHF (420 – 450 MHz) or VHF (144-148 MHz) radio module. SHARI plugs into two USB jacks on a Raspberry Pi2, 3 or 4.
 - b. You will have to decide if you want the version that is UHF or VHF.

AllStar Presentation

Compiled by Dr. Greg C. Meador, A15HV@arrl.net -- July 2023

- c. I bought the SHARI Pi4U assembled for \$90 + shipping.
- d. You can purchase the unassembled kit for \$65 + shipping.
6. A computer to do the raspberry pi setup. It can be Windows, Linux or other. For the purposes of this discussion, we will use a Windows based computer.
7. Download win32diskimager - <http://sourceforge.net/projects/win32diskimager>. This is used for writing the image to the micro SD card for the Raspberry Pi. You will need to right click the drive letter in Windows and select eject before. If you don't eject it you could corrupt the micro SD card.
 - a. Or you can use Raspberry Pi Imager software <https://www.raspberrypi.com/software/>
 - b. Or you can use Balena Etcher software <https://etcher.balena.io/>
8. Go to the following page to download the current image: <https://www.hamvoip.org/#download>
 - a. Here is the direct link as of 07/23/2023: https://www.hamvoip.org/RPi2/RPi-Z2W-2-3-4_V1.7-01_Allstar.exe.
9. You will need to extract this file on your computer before attempting to write the image to the micro SD card.
10. Internet either via wired connection to your home router, WiFi to your home router or hotspot on your cell phone.
 - a. To setup wireless on your device without wired ethernet connectivity, please refer to the following document: <https://www.raspberrypi.com/documentation/computers/configuration.html#wireless-networking-command-line>
11. You will need to setup an account, server and node on <https://www.allstarlink.org/>
12. The information on how to setup your AllStar account including server and node can be found here: <https://groups.io/g/SHARI/files/SHARI%20PiXX%20Documentation/SHARI%20Allstar%20Node%20Setup%20Procedure-Version%201.4.pdf>
 - a. Or <https://www.facebook.com/download/800690941695251/SHARI%20Allstar%20Node%20Setup%20Procedure-Version%201.4.pdf>
13. This document also covers the setup & configuration instructions for your SHARI node.
14. Handheld radio to communicate to your AllStar node.

Great resources:

https://wiki.allstarlink.org/wiki/Main_Page

https://wiki.allstarlink.org/wiki/Beginners_Guide