**SUPPLIED BY WB0YLE and updated January 6, 2021 (Feast of the Epiphany)**

This document is divided into two sections: the digital radio hotspot that will allow access to ZedNet via Brandmeister talkgroup 31429, and the analog side, using the Allstar network to connect to node 28868, which is an analog-to-DMR bridge living in the cloud.

**DMR ZedNet via Brandmeister TG31429:**

The Bill of Materials, which is the fastest way to do this is (although the bits and pieces are available, it becomes a treasure hunt…sometimes it’s just easier to get the whole thing in one place):

[ZUMspot Kit W/1.3 OLED2 (hamradio.com)](https://www.hamradio.com/detail.cfm?pid=H0-016491) **ZUM Radio ZUMspot Kit W/1.3 OLED-2** **$149.95**

which  includes the radio, Raspberry Pi-1, preformatted Pi-Star memory chip operating system, antenna.

You also need a power supply (at least 3A @ 5V), the one that HRO sells is fine:

<https://www.hamradio.com/detail.cfm?pid=H0-016273> ZUMspot Power Supply-$17.95

# You don’t necessarily need a case, but they are available for purchase from HRO for $15 or so.

# Instructions can be found, to configure your hotspot, here: [Click Here To  Download](https://www.hamradio.com/images_managed/misc/H0-016491_Troubleshooting_%20Guide.pdf)

# You then need to make sure that you have a valid RadioID which you obtain (once validating your license) from <http://www/radioid.net> They will assign a 7-digit CCS7 ID, which is the prefix for your hotspot as well as the ID for your radio.  (for instance, my radioid is 3142030; first hotspot is 31420301, second is 31420302, etc.)

# Register your callsign with <http://www.brandmeister.network> as a sysop.

# Once that is apportioned, you can then follow the configuration information at [www.pi-star-uk](http://www.pi-star-uk).

# There are literally dozens of radios available, from 50 watt mobiles from (at the high end) Motorola to the $50. HTs from Baofeng and the like.  They have to be DMR Tier 2 compliant (there are some that aren’t…Tier 2 is the operative word).

**Programming the radio is another issue that can be fraught with aggida, but, I’ve some documentation which goes into how to break it down simply; the concepts are pretty much the same…sometimes the easiest thing is to find a current codeplug and modify it.**

**Analog Network via Allstar node 28868:**

The BOM for this is also based on the foundation of the Raspberry Pi, but due to the overhead of doing the analog to digital conversion for shipping across the network, you can’t use a Pi 1, but have to obtain a Raspberry Pi 3B+ or 4B+ (I prefer the 3B+, and just grabbed a pile of them…since there are a lot of other things you can do with them once you get into it.   
  
Computer: Raspberry Pi 3B+, power supply, case, heat sinks for USB and CPU chips:

[CanaKit Basic Kit for Raspberry Pi 3 Model B+ - Micro Center](https://www.microcenter.com/product/510568/canakit-basic-kit-for-raspberry-pi-3-model-b) $54.95

Memory card: Micro SD Card, Class 10 (important for longevity), 16GB to load operating system and Allstar: [Verbatim 16GB microSDHC Class 10/ UHS-1 Flash Memory Card with Adapter - Micro Center](https://www.microcenter.com/product/446196/verbatim-16gb-microsdhc-class-10--uhs-1-flash-memory-card-with-adapter) $3.99 You will also need a program to write to the card from your PC; on the PC, I’ve had good luck with Win32DiskImager; there are also apps for the Apple family. Choose which one, they’ll both work.

SHARI micronode ham radio: [SHARI – Ham Radio Projects (hamprojects.info)](https://hamprojects.info/shari/). You’ll want the Pi3x (x is either U or V depending on the band you want to use it on) U is $60., V is $65; if you are going to use a Pi 4, then there are models for that SBC which accounts for the differences in how the USB ports are arranged on the 4 versus the 3.

You will need to register at [www.allstarlink.org](http://www.allstarlink.org) for access, prove your license, then relog in once approved to register both a SERVER and request NODE. There is NO cost to do this.

Then…there are two versions of Allstar out there (the bane of an open source project); both interoperate, but one requires a bit more linux experience than the other. The version on allstarlink is the “official” version that is the descendent of the original code written by Jim Dixon (SK WB6NIL), the version located at [www.hamvoip.org](http://www.hamvoip.org) is easier for the first-time user and is the brainchild of Doug Compton and David McGough. There is some friction between the two, but it’s on a personal level; the software from either is useable, works together, and will do what it needed. FWIW, the SHARI folks have built their hardware around the latter software, so, unless you’re good at linux hacking, I’d suggest you follow the hamvoip path if you’re going to build and deploy the SHARI micronode. The software image, which includes the operating system (Linux) and the Allstar application is also FREE (as in Free Beer).

I’m available for consultation (also as in Free Beer) should you get stuck. If it seem needed, I can always stand up a Zoom or Webex conference and we can walk through configuration or troubleshooting if need be. This stuff is not plug and play (yet), but it’s close enough that you can go from a pile of parts (once you have your registration) to a working connection to the net in less than an hour.