



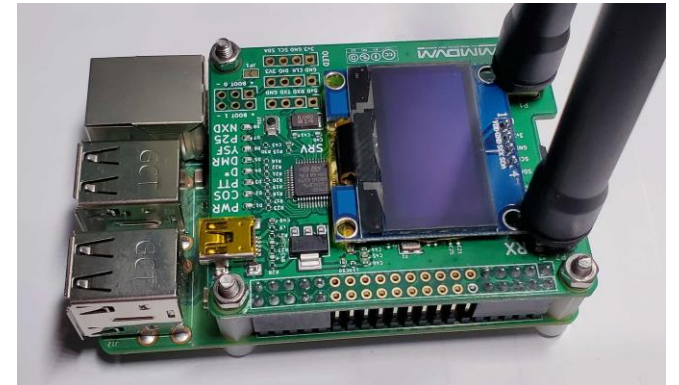
# WHAT IS DMR??

TONTO AMATEUR RADIO ASSOCIATION

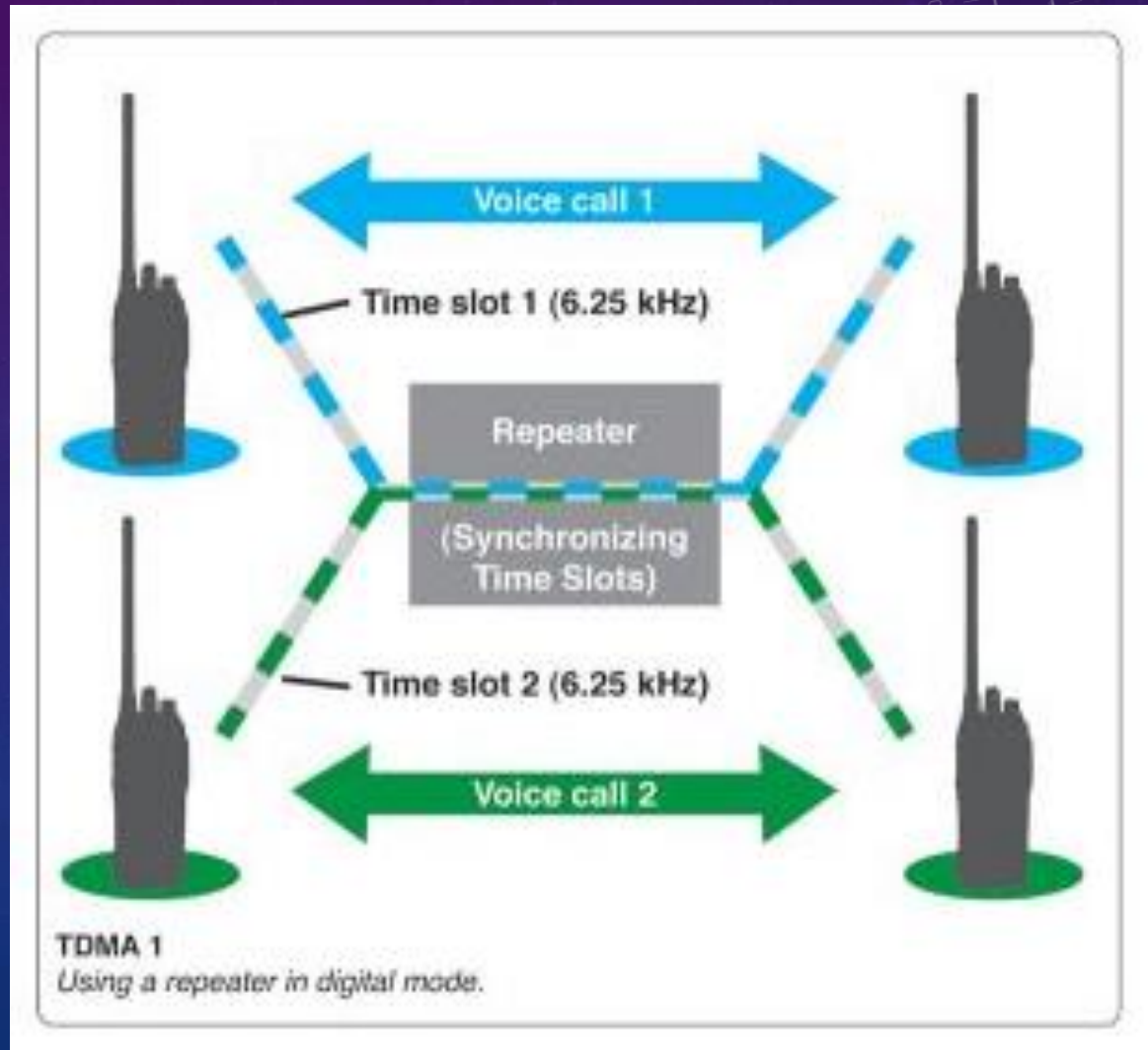
AUGUST 13, 2022 - KJ7ROX

# WHAT IS DMR?

## (DIGITAL MOBILE RADIO)

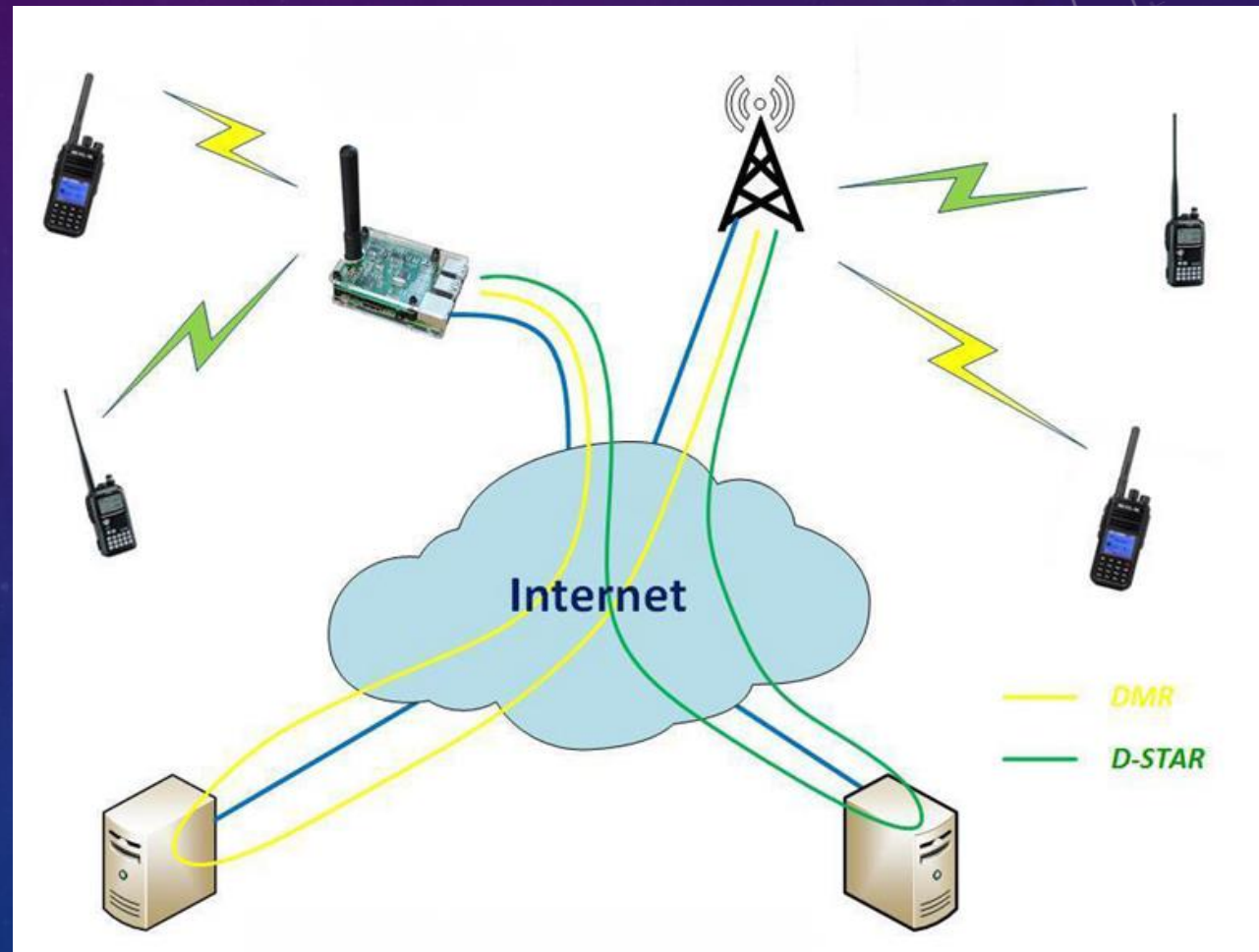


# HOW DOES DIGITAL MOBILE RADIO WORK?



# MULTIPLE DIGITAL NETWORKS

- DMR
- D-Star
- YSF
- P25



# WHAT IS A HOTSPOT?

Internet



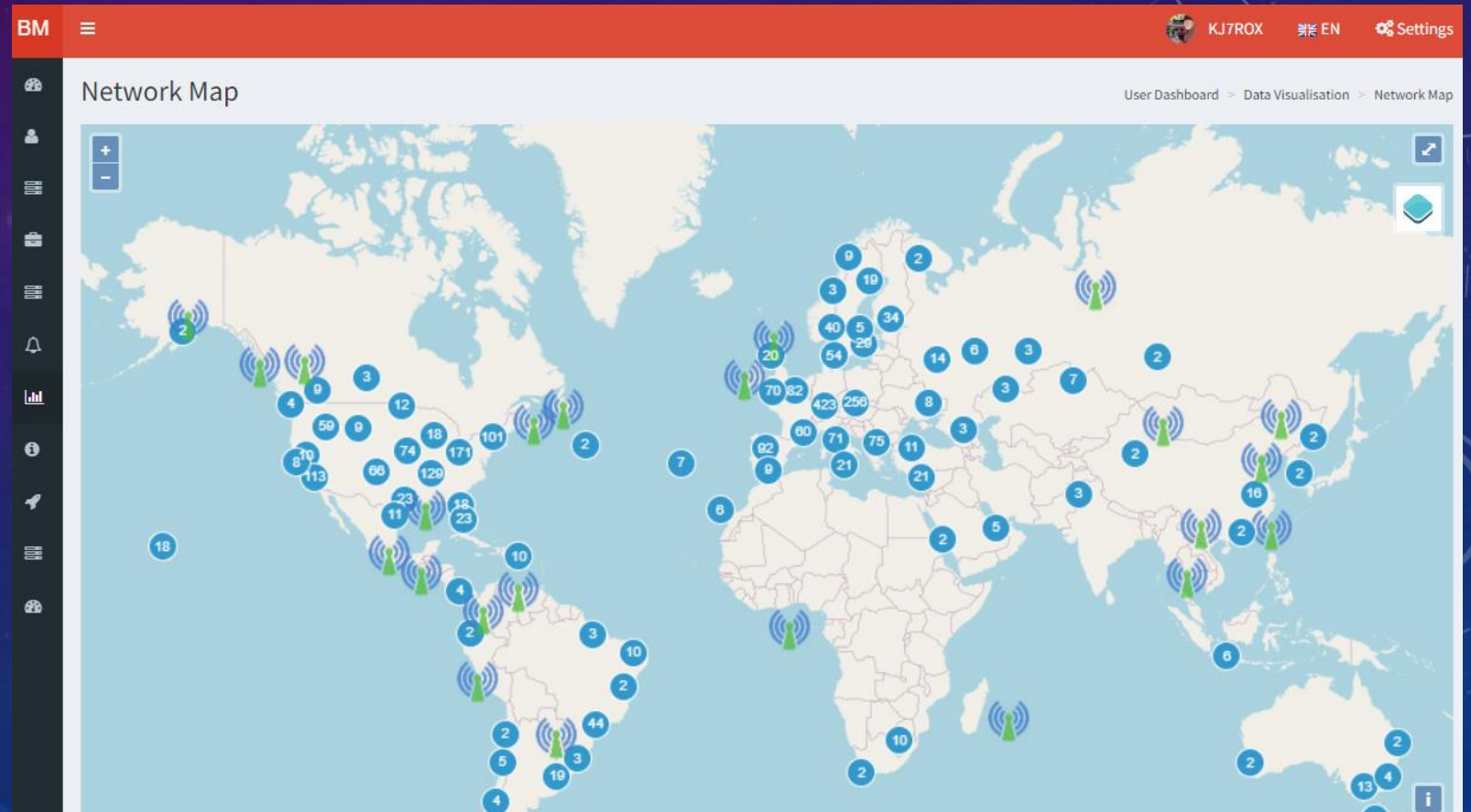
# DMR NETWORKS

- Brandmeister
- DMR-MARC
- DMR+
- TGIF
- AZ-TrboNet
- Others...



# WHO CAN I TALK TO ON DMR?

Brandmeister Network Map  
(repeaters)



# BRANDMEISTER DASHBOARD

The dashboard features a top navigation bar with the BrandMeister logo, a hamburger menu, and user information (KJ7ROX, EN, Settings). A left sidebar lists navigation options: User Dashboard, Last Heard, Repeaters (5164), Hotspots (15291), Masters (48), Alerts, Data Visualisation, Information, Services, Devices, My Devices (311568, 318689001, 318689002), Sysop Menu, and Sysop Dashboard.

### User Dashboard

<b>REPEATERS</b> 5164 Full report	<b>HOTSPOTS</b> 15291 Full report
<b>MASTERS</b> 48 Full report	<b>VOICE CALLS</b> 7 Full report

<b>Repeater in RX</b> 9	<b>Repeater in TX</b> 198	<b>External calls</b> 2
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### Map

The map displays a world map with red markers indicating active repeater locations across North America, Europe, and Australia.

### Latest BrandMeister News

**7/12/2022**

**Repeaters static talkgroups are now replicated throughout Brandmeister master servers** Oliver F4BWG [Share on Facebook](#) [Share on Twitter](#) 4:57:21 PM

Up until now, the static and time-static talkgroups configured for a repeater were saved on the master the repeater is connected to at the time of the configuration. When a repeater was moved to a different Brandmeister master server, the static talkgroups had to be re-defined so it could be saved into the local database of the new master server.

# TALKGROUPS

- There are **1633** available TalkGroups on the BrandMeister network.
- Talkgroups can be based on a geographic location or an interest group or...
- Talkgroup # 311568 is TARA\_DMR

TG 3100	USA Bridge
TG 3101	Alabama - 10 Minute Limit
TG 3102	Alaska - 10 Minute Limit
TG 3104	Arizona - 10 Minute Limit
TG 3105	Arkansas - 10 Minute Limit
TG 3106	California - 10 Minute Limit
TG 3108	Colorado - 10 Minute Limit
TG 3109	Connecticut - 10 Minute Limit
TG 3110	Delaware - 10 Minute Limit
TG 3111	D.C. - 10 Minute Limit
TG 3112	Florida - 10 Minute Limit
TG 3113	Georgia - 10 Minute Limit
TG 3115	Hawaii - 10 Minute Limit
TG 3116	Idaho - 10 Minute Limit
TG 3117	Illinois - 10 Minute Limit
TG 3118	Indiana - 10 Minute Limit
TG 3119	Iowa - 10 Minute Limit
TG 3120	Kansas - 10 Minute Limit
TG 3121	Kentucky - 10 Minute Limit
TG 3122	Louisiana - 10 Minute Limit
TG 3123	Maine - 10 Minute Limit
TG 3124	Maryland - 10 Minute Limit
TG 3125	Massachusetts - 10 Minute Limit
TG 3126	Michigan - 10 Minute Limit
TG 3127	Minnesota - 10 Minute Limit
TG 3128	Mississippi - 10 Minute Limit
TG 3129	Missouri - 10 Minute Limit
TG 3130	Montana - 10 Minute Limit
TG 3131	Nebraska - 10 Minute Limit
TG 3132	Nevada - 10 Minute Limit

# BUILD A JUMBOSPOT HOTSPOT

- Buy a RaspberryPi Zero 2 W
- Buy a MMDVM Modem “Hat”
- Solder a header on the Zero 2 W
- Assemble
- Load the Pi-Star OS on a SD-micro card



# BUY A HOTSPOT



# REPEATER OR HOTSPOT?

- DMR via a Repeater does not require Internet (at the radio)
  - Limited by the repeater's range
- DMR via Hotspot can be used anywhere there is WiFi/Internet
  - DMR Hotspots can be
    - Simplex (only 1 Timeslot TS1 or TS2)
    - Duplex (both Timeslots TS1 + TS2)

# PI-STAR

Pi-Star's Dashboard gives you important information about your signal quality and connections you have made

<http://pistar.uk>

Hostname: pi-star Pi-Star:4.1.6 / Dashboard: 20220728

## Pi-Star Digital Voice Dashboard for KJ7ROX

Dashboard | Admin | Configuration

Modes Enabled	
D-Star	DMR
YSF	P25
YSF XMode	NXDN
DMR XMode	POCSAG

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR	NXDN Net
YSF2NXDN	YSF2P25
DMR2NXDN	DMR2YSF

Radio Info	
Trx	Listening DMR
Tx	431.662500 MHz
Rx	431.662500 MHz
FW	HS_Hat:v1.4.17
TCXO	14.7456 MHz

DMR Repeater	
DMR ID	3186890
DMR CC	1
TS1	disabled
TS2	enabled

DMR Master	
BM 3104	United St..

Gateway Activity								
Time (MST)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER	
22:07:07 Aug 12th	DMR TS2	KJ7ROX (GPS)	TG 311568	RF	0.4	0%	0.0%	

Local RF Activity								
Time (MST)	Mode	Callsign	Target	Src	Dur(s)	BER	RSI	
22:07:07 Aug 12th	DMR TS2	KJ7ROX (GPS)	TG 311568	RF	0.4	0.0%	S9+46dB (-47 dBm)	

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2022.  
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Facebook Group  
or Click here to join the Support Forum  
Get your copy of Pi-Star from here.

# PI-STAR CONFIGURATION

Pi-Star can be configured for:

- DMR
- D-Star
- Yaesu System Fusion
- P25
- NXDN

Pi-Star v4.1.5 / Dashboard: 2022/07/28

## Pi-Star Digital Voice - Configuration

Dashboard | Admin | Expert | Power | Update | Backup/Restore | Factory Reset

### Gateway Hardware Information

Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	5.10.63-v7+	Raspberry Pi Zero 2 Rev 1.0	0.41 / 0.33 / 0.14	40.8°C / 105.4°F

### Control Software

Setting	Value
Controller Software:	<input type="radio"/> DStarRepeater <input checked="" type="radio"/> MMDVMHost (DV-Mega Minimum Firmware 3.07 Required)
Controller Mode:	<input checked="" type="radio"/> Simplex Node <input type="radio"/> Duplex Repeater (or Half-Duplex on Hotspots)

### MMDVMHost Configuration

Setting	Value
DMR Mode:	<input checked="" type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
P25 Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	<input type="checkbox"/>
YSF2NXDN:	<input type="checkbox"/>
YSF2P25:	<input type="checkbox"/>
DMR2YSF:	<input type="checkbox"/> Uses 7 prefix on DMRGateway
DMR2NXDN:	<input type="checkbox"/> Uses 7 prefix on DMRGateway
POCSAG:	<input type="checkbox"/> POCSAG Paging Features
MMDVM Display Type:	OLED Type 3 <input type="button" value="v"/> Port: modem <input type="button" value="v"/> Nextion Layout: ON7LDS L2 <input type="button" value="v"/>

### General Configuration

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	KJ7ROX
CCS7/DMR ID:	3186890
Radio Frequency:	431.662.500 MHz
Latitude:	34.33338 degrees (positive value for North, negative for South)
Longitude:	-111.3007 degrees (positive value for East, negative for West)
Town:	Payson, DM44ih
Country:	USA
URL:	http://www.qrz.com/db/kj7rox <input type="radio"/> Auto <input checked="" type="radio"/> Manual
Radio/Modem Type:	STM32-DVM / MMDVM_HS - Raspberry Pi Hat (GPIO) <input type="button" value="v"/>
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public

# STEPS TO GET STARTED IN DMR:

1. Get a DMR ID (free) – Requires that you send a pdf of your FCC Ham License  
<https://www.radioid.net/register>
2. Get a DMR radio (not free)
3. Setup your account on the Brandmeister Network
4. Find a DMR repeater or get a DMR Hotspot (or both)
5. Program your radio with the DMR TalkGroups that you want to use  
(codeplug)
6. Get talking!

## SOME HELPFUL DMR LINKS:

- <https://www.dmrfordummies.com/library/>
- <https://www.radioid.net/register>
- <https://brandmeister.network/>
- <http://w0wc.com/resources/brandmeister-dmr-nets/>
- <https://www.pistar.uk/index.php>
- <https://www.pishop.us/>