DMR NETWORKS BASICS

How they are accessed and linked
DMR NETWORKS IN AMATEUR RADIO

- DMR-MARC (and C-Bridge based repeaters)
  - Maintains database of user IDs for all DMR networks
  - Repeaters only Connected via C-Bridges to Main network
- DMRplus
  - Ties to legacy Hytera network
  - Allows connection of hotspots and non Moto repeaters
- Brandmeister
  - Open network allows homebrew repeaters and hotspots
  - Repeaters all have default set of TG depending on location
DMR-MARC / C-BRIDGE NETWORKS

• All connections through repeaters connected to C-Bridges
• No direct connection of home brew repeaters or hotspots
• Talkgroup structure no reflectors used
• Repeaters can offer any TG that is available on their C-Bridge
• Not all TG are available on every C-bridge (state and regional)
• Selection is done via TG settings channels in radio (code Plug)
• Need to know what TG is available and on what Time Slot
• Info must be programmed in radio to access TG
DMR-MARC INFO RESOURCES

- [http://dmr-marc.net/repeaters.html](http://dmr-marc.net/repeaters.html)
  - Lists Repeaters on map can drill down
  - Zoom in on map to see individual repeaters
  - Click on repeater and get specific info
    - Callsign and Contact
    - Frequency and offset
    - Color Code
    - Time Slot and Talk Group setup

- [http://dmr-marc.net/](http://dmr-marc.net/)
  - General info on network
  - New repeaters and Database

  - Similar Map to above but lists all networks
  - Is usually more up to date than DMR-Marc site

- Repeater Book DMR Search
  - [http://www.k4usd.org/](http://www.k4usd.org/)

- [http://www.trbo.org/cBridge/networkwatch.html](http://www.trbo.org/cBridge/networkwatch.html)
DMRplus

• Allows connection of non Moto Repeaters to network
  • Most repeaters in Europe very few left in USA on DMRplus
  • Legacy Hytera network

• Allows hotspots
  • DV4Mini
  • Shark RF Open Spot
  • DVMega

• Uses combination of Talkgroups and Reflectors
  • Repeaters usually TG on TS1 and TS2 for reflectors.
  • TG setup in radio as a group call contact
  • Reflectors use TG9 and Private call to reflector number to connect
  • Private call to 4000 to disconnect a reflector
  • Many reflector numbers mirror Brandmeister reflectors but are not linked
DMRplus INFO RESOURCES

  - Map lists all network repeaters
  - Drill down and click on repeater for info

- **Repeater Book DMR Search**

- **DMRplus Repeater google maps**
  - Similar to CQ DMR map above but only DMR+
  - Has repeater info when you drill down

- [http://ham-dmr.ch/](http://ham-dmr.ch/)

- **DMRplus dashboard**
BRANDMEISTER

- Allows connection of any brand repeater or home brew repeater running MMDVM board
- Allows connection of Hostspots via HomeBrew protocol
  - DV4mini (with the proper software MF2)
  - DVMEga based hotspots RPI or bluestack/BlueDV
  - Open Spot
- Use Talkgroups via group call programmed in radio
- Use Reflectors on TG9 connected via a private call to number
- Repeaters have default configuration based on location
  - Repeater owner can request changes to this config
- Decentralized network with Master servers located globally
- Hoseline website allows monitoring audio via internet
BRANDMEISTER INFO RESOURCES

  - Map lists all network repeaters
  - Drill down and click on repeater for info

- [https://brandmeister.network/](https://brandmeister.network/)
  - Last heard dashboard
  - List of hotspots and repeaters connected
  - Status and connections to all master servers

- **Brandmeister Hose line site**
  - Streaming audio from talkgroups
  - Scan up to 5 talkgroups at once
  - List of last heard users on all TG

- **Brandmeister 3148 FB files section**
  - Check the many documents here for info

- **Papa System DMR site**
  - A lot of good info on Brandmeister
BRANDMEISTER

- **US Default Repeater setup**
  - Default is based on location of repeater
  - Any BM TG available as Dynamic PTT
  - Available on either TS but TS 1 recommended
  - Reflectors on TG9 can be linked on TS 2
  - Repeater owners can request changes to this
  - Control panel for repeater owners coming soon

- **Hotspot setup (except DV4mini)**
  - Connect to any BM TG via group call in radio
  - TG are static until disconnected or moved
  - Key up radio on group call 4000 to disconnect
  - Key up on another TG to move to new TG
  - Reflectors via TG9 connect via Private call
  - Reflectors remain on until disconnected
  - Disconnect with private call to 4000
  - Most Reflectors have a linked TG available

- **DV4mini setup**
  - All connections are via TG9 to BM
  - Reflectors via control panel or private call to ref
  - TG access only through extended routing in control panel

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<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>Worldwide</td>
<td>Worldwide Talk Group</td>
</tr>
<tr>
<td>93</td>
<td>North America</td>
<td>North America</td>
</tr>
<tr>
<td>3100</td>
<td>U.S.A</td>
<td>Nationwide - Connected to DCI Bridge on DMRX</td>
</tr>
<tr>
<td>3109X*</td>
<td>U.S. Area X</td>
<td>Regional Talk Group Based on Repeater Callign Area</td>
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<tr>
<td>31080**</td>
<td>Hytera Network USA</td>
<td>Talk Group for Legacy DMRPlus Systems in the U.S.</td>
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* See list of Regional talk group IDs later in this document.
** Only Static on Legacy DMRPlus Systems

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<tr>
<td>2 or 9</td>
<td>Local</td>
<td>Local Talk Group as Determined by Repeater Admin</td>
</tr>
<tr>
<td>8900*</td>
<td>Local</td>
<td>Local Talk Group for Las Vegas Area Repeaters</td>
</tr>
<tr>
<td>311XX**</td>
<td>Statewide</td>
<td>Statewide Talk Group Based on Repeater Location</td>
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* Only for Las Vegas Area Repeaters
** See list of Statewide talk group IDs later in this document

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<thead>
<tr>
<th>Number</th>
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<th>Description</th>
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</thead>
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<tr>
<td>9990 or 310997*</td>
<td>Parrot</td>
<td>Have your Audio Recorded and Played Back to You.</td>
</tr>
<tr>
<td>310999</td>
<td>ARS/RRS/APRS</td>
<td>Registration and Location (APRS) Services</td>
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* Private Call
BRANDMEISTER TG VS REFLECTORS

- Both available on repeaters or hotspots
- Most reflectors have a linked talkgroup
- Many TG do not have a linked Reflector
- Statewide TG do not have linked Reflectors
- You can use either if they are linked
- TG list and reflector vs TG list are both available in files section of BM 3148 FB page
  - Brandmeister 3148 FB files section
# Linked Groups Between Networks

<table>
<thead>
<tr>
<th>Name</th>
<th>BM</th>
<th>DMR-Marc</th>
<th>DMR+</th>
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<tbody>
<tr>
<td>USA NW 3100</td>
<td>TG 3100</td>
<td>DCI Bridge TG 3100</td>
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<tr>
<td>TAC 310</td>
<td>TG 310</td>
<td>TG 310 PTT</td>
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<tr>
<td>TAC 311</td>
<td>TG 311</td>
<td>TG 311 PTT</td>
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<tr>
<td>TAC 312</td>
<td>TG 312</td>
<td>TG 312 PTT</td>
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</tr>
<tr>
<td>DMR+ USA</td>
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<td>TG 133</td>
<td>TG 133</td>
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<tr>
<td>DMR+ UK</td>
<td>NA</td>
<td>TG143</td>
<td>TG143</td>
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<td>DMR+ S Pacific</td>
<td>NA</td>
<td>TG153</td>
<td>TG 153</td>
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<td>31089 HYT USA</td>
<td>TG 31089</td>
<td>NA</td>
<td>TG 31089</td>
</tr>
<tr>
<td>BM 3148 TX SW</td>
<td>TG 3148</td>
<td>TG 9000</td>
<td>NA</td>
</tr>
</tbody>
</table>

- Known TG linked between the networks listed here
- The 4 first TG are linked between BM and DMR-Marc at the core level so available to any repeater via their C-bridge on DMR-MARC
- The BM 3148 TX is linked only at the C-Bridge level only on a few so it is only available on repeaters on them.
- Legacy Hytera systems on DMR+ linked to BM TG 31089
CONNECTING TO ANOTHER USER

• You need to know how each person is connecting and which network to know what TG/Ref you could connect on if at all.

• EX1: BM Hotspot to another BM Hotspot
  • You can connect on any BM TG you want.
  • If you know they monitor their Statewide you could call them there
  • You could arrange to meet on one of the BM TAC channels if you like
  • You can even make up a number as long as its not used at connect
  • You could also use any BM reflector you like
  • Make a Private call to the their DMRID number via contacts or manual dial on the radio menu. Use TG 9 and disconnect from reflectors or TG first.

• EX2: BM Hotspot to a BM Repeater user
  • You could connect direct to them on a TG static on their repeater
  • Their Statewide group or their Call zone group both are static
  • They can activate any BM TG on TS 1 as PTT and call you there
CONNECTING TO ANOTHER USER

• EX3: BM Hotspot to DMR-Marc repeater user
  • Your options here are a bit more limited
  • You could try to call them on TG 3100 if that is static on their repeater
  • You could arrange to have them meet you on TG 3100 or one of the TAC channels TAC 310 or the others if they are available on the repeater.
  • You could not talk to them on their statewide TG or any of the other DRM-Marc TG that are not linked to BM
  • None of the Hotspots are able to connect to these TG on DMR-Marc repeaters. It is not an issue with the hotspot but a limitation of the network imposed from the DMR-Marc side.
  • This is one of the biggest issues that confuses new users with a hotpot and wondering why they can’t talk to all the local repeater users on the local or statewide TG.
  • This is why we need more repeaters to move to Brandmeister. If you look at the map you see the growing number of green dots vs blue dots on there. CA is a good example almost the whole state has moved to BM. This of course is my personal opinion.