BrandMeister Getting Started Guide

This guide is intended to help PAPA members learn about and explore the BrandMeister network.

PAPA’s evaluation of BrandMeister will end on 4/18/2016. At that time we will poll members electronically and at the PAPA meetings before deciding to move to BrandMeister or stay with the C-Bridge network.

In this document we will talk about BrandMeister, how it differs from C-Bridge, and some of the features unique to BrandMeister.

Above all else you are encouraged to dig into your code plug, make changes, add talkgroups, and HAVE FUN! This is amateur radio - go forth and experiment!

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Why are we considering BrandMeister?

BrandMeister offers some added features for users and system operators. It addresses some of the challenges of the C-Bridge network. It also brings some risk.

User Advantages

● I can use more of the features available on my radio. For example GPS and text messaging.
● Control over the talkgroups I use.
● Support for DV4Mini and other hot spots
● Makes DMR a bit more like D-STAR in terms of the user having control over how the local repeater is connected to the network (the user selects talkgroups for use). This can potentially make the DMR learning curve less steep.
● Has a cool name ;-) 
● More online tools available including one in the testing phase that will allow you build a scan list to listen to up to 5 TGs.
● Brandmeister offers users the ability to communicate worldwide with just the changing of the channel on the user's radio. No linking, unlinking or asking for a TG to be added to the c-bridge. Simply program the TG you want and key the mic.

Administrator Advantages

● Reduced politics involved in the distribution of talkgroups
● Simplification in managing our system
● Support for Homebrew repeaters
● Better dashboard available to club users
● The Hose is available to club users
● Developed "By Hams, For Hams" so we should see more features to our liking and is more in the spirit of Amateur Radio.
Challenges with the C-Bridge network

- Currently the management of TGs in our c-bridge is a myriad of rules and hold off times. Every repeater we add to the bridge exponentially adds to the number of rules we need to create in order to make the systems work.
- The current c-bridge software was never intended to do what we are doing with it. It was meant for much smaller applications.
- The network of c-bridges is a myriad of cross connections that introduces latency, dropouts and potential collisions between users.

Risks with BrandMeister

- BrandMeister software is immature and does not have a long history of stable operation under load
- There is no guarantee the volunteer developers will continue to develop and support the software
- Management of the server and network are outside the control of PAPA System administrators

Static and Dynamic Talkgroups

The BrandMeister network manages talkgroups differently that the C-Bridge.

On the C-Bridge network each repeater is configured with a set of talkgroups. There are “always-on” and “user activated” (or push-to-talk) groups. These are configured at the C-Bridge and cannot be modified by users from their radios.

On the BrandMeister network static talkgroups are configured by repeater operators. These talkgroups are similar to always-on talkgroups. They will always transmit when there is traffic. These are the only talkgroups that must be configured by repeater operators.

Dynamic talkgroups are just that. When a user keys up on a dynamic talkgroup the BrandMeister system creates a subscription for that talkgroup on that repeater. Then, for 15 minutes, the system will send audio for that talkgroup to the repeater. 15 minutes after the last transmission on a given repeater, that talkgroup will be dropped from the repeater.
Users have the ability to key up on any talkgroup and use it. For us here in California, a user could key up on a Florida state talkgroup and it would work fine. 15 minutes later the connection would drop. Interestingly, the timeslot is not important. The network will route the audio to the repeater and transmit on the same timeslot. It is recommended that timeslot 1 be used for wide area conversations leaving timeslot 2 available to local communications.

Unlike other linking systems there is no need to drop a connection or restore a link.

Dynamic talkgroups are time slot agnostic. This means I can key up on talkgroup 123 on timeslot 1 and could be talking with someone on talkgroup 123 on timeslot 2. Inside the network there is no time slot, this is only considered when the talkgroup is delivered to a repeater, and it is delivered on the timeslot of the most recent transmission.

Talkgroup Settings

In BrandMeister the list of talkgroups is different than C-Bridge.

It is also important to know a change has been made to the timeslots for many of the talkgroups.

PAPA Members are encouraged to add their own talkgroups. You can find a list of well know talkgroups in the user guide (http://dmrx.net/files/US_BM_User_Guide.pdf). You are also encouraged to watch the last heard list and use “The Hose” (http://hose.brandmeister.network) and discover talkgroups. Add them to your code plug and experiment.

During the PAPA System BrandMeister evaluation phase the talkgroup lineup will be different than when we transition to BrandMeister, if we decide to make this change.

PAPA BrandMeister Evaluation Talkgroup Lineup

<table>
<thead>
<tr>
<th>Name</th>
<th>Timeslot 1</th>
<th>Timeslot 2</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>2</td>
<td>2</td>
<td>Static</td>
</tr>
<tr>
<td>PAPA</td>
<td>7272</td>
<td>Static</td>
<td>Protected</td>
</tr>
<tr>
<td>SoCal</td>
<td>76225</td>
<td>Static</td>
<td>Protected</td>
</tr>
<tr>
<td>SoCal 1</td>
<td>721</td>
<td>Dynamic</td>
<td>Protected</td>
</tr>
<tr>
<td>California</td>
<td>3107</td>
<td>Static</td>
<td>Protected</td>
</tr>
<tr>
<td>California 1</td>
<td>2251</td>
<td>Dynamic</td>
<td>Protected</td>
</tr>
<tr>
<td>Name</td>
<td>Timeslot 1</td>
<td>Timeslot 2</td>
<td>Type</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>CA 3106</td>
<td>3106</td>
<td></td>
<td>Dynamic</td>
</tr>
<tr>
<td>North America</td>
<td>93</td>
<td></td>
<td>Dynamic</td>
</tr>
<tr>
<td>World Wide</td>
<td>91</td>
<td></td>
<td>Dynamic</td>
</tr>
<tr>
<td>Nationwide</td>
<td>3100</td>
<td></td>
<td>Dynamic</td>
</tr>
<tr>
<td>Audio Test</td>
<td>9999</td>
<td>9999</td>
<td>Dynamic</td>
</tr>
<tr>
<td>Parrot</td>
<td>9990</td>
<td>9990</td>
<td>Private Call</td>
</tr>
<tr>
<td>Call Zone 6</td>
<td>31096</td>
<td></td>
<td>Static</td>
</tr>
</tbody>
</table>

The standard talkgroups for a BrandMeister server are as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Timeslot 1</th>
<th>Timeslot 2</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td></td>
<td>2</td>
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<td>31096</td>
<td></td>
<td>Static</td>
</tr>
</tbody>
</table>

If the PAPA System decides to continue with BrandMeister, we will have the following talkgroups as well, we will not know the talkgroup IDs until they are setup by BrandMeister.

- California 1 - Dynamic - for all California repeaters
- SoCal - Static - for all Southern California repeaters
- SoCal 1 - Dynamic - for all Southern California repeaters
- PAPA - Static - For PAPA repeaters only

There is still a lot of discussion about interconnecting the BrandMeister and C-Bridge talkgroups. At this time it is too early to know if this will be done long term.
BrandMeister Dashboard

Each BrandMeister server hosts a dashboard showing activity and connections on the server. These pages are responsive in design meaning they work well on both desktop and mobile devices.

Most obvious on the homepage is the overview of connection types, industrial repeaters (Motorola and Hytera), homebrew, DV4Mini, and Masters. There are also graphs that show the number of connections from each country and network activity.

From here you can view a full report of each connection type, get status of individual connections and more.
Last Heard List


The last heard page shows all activity worldwide. You can open the search panel and create a filter to restrict your view to a single master, repeater, talkgroup, call sign, radio ID, and a few other things.

On each row, you may notice a speaker icon in the Destination column. This is a link to the Hose allowing you to listen to the conversation.
Listen Now - “The Hose”

[http://hose.brandmeister.network](http://hose.brandmeister.network)
The Hose is a combination of a Listen Now and Audio Test. You can listen to active talkgroups to decide about adding them to your code plug. You can also test your audio. See how it compares to the audio of others.

Android Applications

There are two Android applications available to help users with the BrandMeister network.

[BrandMeister Tool](BrandMeister Tool) gives you access to the Last Heard list from your Android phone or tablet
[BrandMeister Live](BrandMeister Live) gives you access to The Hose from your Android phone or tablet

You can use these applications to expand and enhance your experience using BrandMeister repeaters.
Setting up GPS

The BrandMeister servers have a gateway to APRS.fi for location information. Setting up GPS support on your radio is easy and once setup works well. Basic settings can be found at http://bm.pd0zry.nl/index.php/Motorola_Radios. You will need to update the ARS Radio ID based on your country. See the country specific page on the BrandMeister wiki for details. For the US this is https://bm.pd0zry.nl/index.php/United_States

This is a summary of the settings for Motorola Radios

<table>
<thead>
<tr>
<th>General Settings</th>
<th>Prefered channel settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>● GPS: On</td>
<td>● ARS: On System/Site Change</td>
</tr>
<tr>
<td>Network Settings</td>
<td>● Enhanced GPS: Off</td>
</tr>
<tr>
<td>● CAI Network: 12</td>
<td>● Compressed UDP Data Header:</td>
</tr>
<tr>
<td>● ARS Radio ID: 310999 (this</td>
<td>● Standard DMR</td>
</tr>
<tr>
<td>depends on the master)</td>
<td>● GPS Revert: Selected</td>
</tr>
<tr>
<td></td>
<td>● Data Call Confirmed: On</td>
</tr>
<tr>
<td></td>
<td>● CSBK Data: Off</td>
</tr>
</tbody>
</table>

General Settings:
Network Settings

Because GPS takes a lot of power it is recommended that you turn off the GPS when you don’t need it running. This is easiest if you program a button to turn GPS on and off.

General channel settings - set ARS to “On System/Site Change” and Compressed UDP Data Header to DMR Standard.
In the TX settings for your channel set GPS Revert to Selected, Data Call Confirmed to On, and CSBK Data to Off.

You will need to do this for each channel on the BrandMeister repeater.

After setting up your radio you will need to configure the gateway so your location information is forwarded from the BrandMeister network to the APRS.fi servers. This is done on the Digital
Radio Amateur Technologies site. [http://cloud.dstar.su/bootstrap/](http://cloud.dstar.su/bootstrap/) You will need to create an account on this site, there is an authentication process, but it is automated and quick.

After your account is setup go back to the site and click “Self-Care”. Then “Ham DMR” in the menu at the top of the page.

This page will allow you to setup your APRS information for each of your DMR IDs. Once this is done go out and have some fun, drive around, do stuff, see people, then check aprs.fi.
Your location will show up and be identified with your DMR Radio ID.
Text Messaging

This is not a full description of text messaging, more of a reminder that it is available. Text messaging is support on the BrandMeister network and you are encouraged to experiment with it. Text messaging is not a store-and-forward system. The recipient does need to have their radio on and tuned to a BrandMeister repeater when you send a message to them.

The recipient does not need to be local, they can be connected to any repeater on the BrandMeister network.

Most of the radios allow you to create a set of messages using CPS. Create some messages and send them to others.

DV4Mini

The DV4Mini is a USB dongle that give the operator an ability to connect into DMR, D-Star, Fusion and other networks. For DMR both DMR+ and BrandMeister are support.

This discussion will not include setting up the dongle as getting the software to work can be a challenge. There are a couple of URLs you will need to get started.

DV4MF2 Software: [https://bm.pd0zry.nl/index.php/DV4mini](https://bm.pd0zry.nl/index.php/DV4mini)

You will need the DV4MF2 software to use BrandMeister. But, you must install the DV4Mini software first, then download DV4MF2 and put it into the same folder as the DV4Mini.exe file.
From there you can run the DV4MF2 application.

Software Setup

Start on the “Gateway Setup” tab. For most PAPA members, you will want to select the 3103 master. This is in San Jose. For reference 3101 is in New York, and 3102 is in Texas.

You will also want to set your radio ID and location information.

Now go back to the “DV Operation” tab. Set the frequency, DV Mode (BrandMeister) and select “XTG” (Extended Talkgroup). Next you can select a talkgroup. Start with something easy like 3106. After selecting the talkgroup click on the “Talkgroup” button. You should see a message about routing to the talkgroup.
Radio Setup

Now that you have the software setup you need to program your radio. Create a zone and channel. Setup your channel as follows:

Color Code: 1
Time Slot: 2
TX/RX Frequency: match the software
Talkgroup ID: 9

You should now be able to key up your radio and talk via the DV4Mini.

To change talkgroups you would simply select a different talkgroup and click the “Talkgroup” button.
Extended Routing

Another way to change talkgroups is by using the BrandMeister dashboard. On the Dashboard select “Extended Routing”. Under User ID select yourself. This will only work if you have the DV4MF2 software connecting to the same master you are viewing on the web.

Now you can select a talkgroup, click OK, and start transmitting on that talkgroup.

Adding a New Talkgroup to Your Codeplug

So let’s say you found a talkgroup on “The Hose” and want to add it to your codeplug. There are 3 steps for making that addition:

- Add the Talkgroup to your Contacts list.
- Add a Channel for the Talkgroup.
- Add the Channel to a Zone
The details for doing this with the PAPA Connect Systems and MD-380 codeplugs are outlined below. The concepts are the same for Motorola, Hytera and other DMR radios.

Add the Talkgroup to Your Contact List

You have a couple of choices depending on your radio. For the CS-700 and MD-380, the **Digital Contacts** list is pretty full, however we have built in some “placeholder” contacts so you can easily make additions. These are the contacts with “PH” in the name, i.e. “BM PH0”, “XRF PH7”, “PH9”. Just change the **Call ID** to your desired talkgroup number and the **Contact Name** to something you will recognize and this part is complete. Make sure the Call Type is **“Group Call”**. You can use the same procedure for the CS-750/800, or just add your contact to the end of the list, making sure to enter the talkgroup number, a name, and selecting “Group Call”.

Add a Channel for the Talkgroup

Again, the PAPA codeplugs have space for growth built in. To add a channel on your favorite repeater (or repeaters) for your new talkgroup, choose one of the “open” channels (open1, etc). These channels are populated with much of the information needed such as frequency, color.
code and timeslot. Change the “**Contact Name**” to your new talkgroup and verify the timeslot is set to “1”. Change the channel name to something you will recognize, then save your changes. For the CS-750/800 you can add a channel to the end of your list if preferred.

![Image](https://example.com/image.png)

**Add the Channel to a Zone**

The final step is to add the channel you created to a Zone. Select the Zone you wish to add the channel to, highlight the channel you wish to add, then click “**Add**”. Save your changes, download your codeplug to your radio, and you are set. If your desired Zone is full, delete a channel to make room. Another option is to add a new Zone and populate it with the talkgroups you use most. The PAPA repeaters each have 3 Zones for this purpose, and to give an idea of what can be done with Zones.
Reference

BrandMeister Dashboard: http://bm.ham-dmr.org
BrandMester LastHeard: http://bm.dmrx.net/index.php?page=lh

To contact the PAPA System DMR Steering Committee please send email to dmr@papasy.com