

DMR Gateway

Radio Hot Spot

K3SMT

MMDVM

- MMDVM stands for “Multi-Mode Digital Voice Modem”, a versatile piece of hardware and software that allows a single radio repeater or hotspot to handle multiple digital voice modes such as:
 - DMR (Digital Mobile Radio)
 - D-Star (Digital Smart Technologies for Amateur Radio)
 - YSF (Yaesu System Fusion)
 - P25 (Project 25)
 - NXDN (Next Generation Digital Narrowband)
- Most Amateur Radio operators use Pi-Star software to run radio hotspot for MMDVM Repeaters

DMR Usage

- Typical DMR configuration is to select one of the DMR Masters from a particular DMR network.
 - BrandMeister – A popular US master is BM_3103
 - DMR+ - A typical IPSC2_QUADNET
- Most people only configure one DMR Network and stay with the network.
- If they want to change networks they access the Pi-Star dashboard and change the configuration.
- What if you want to use multiple networks?

DMR Gateway

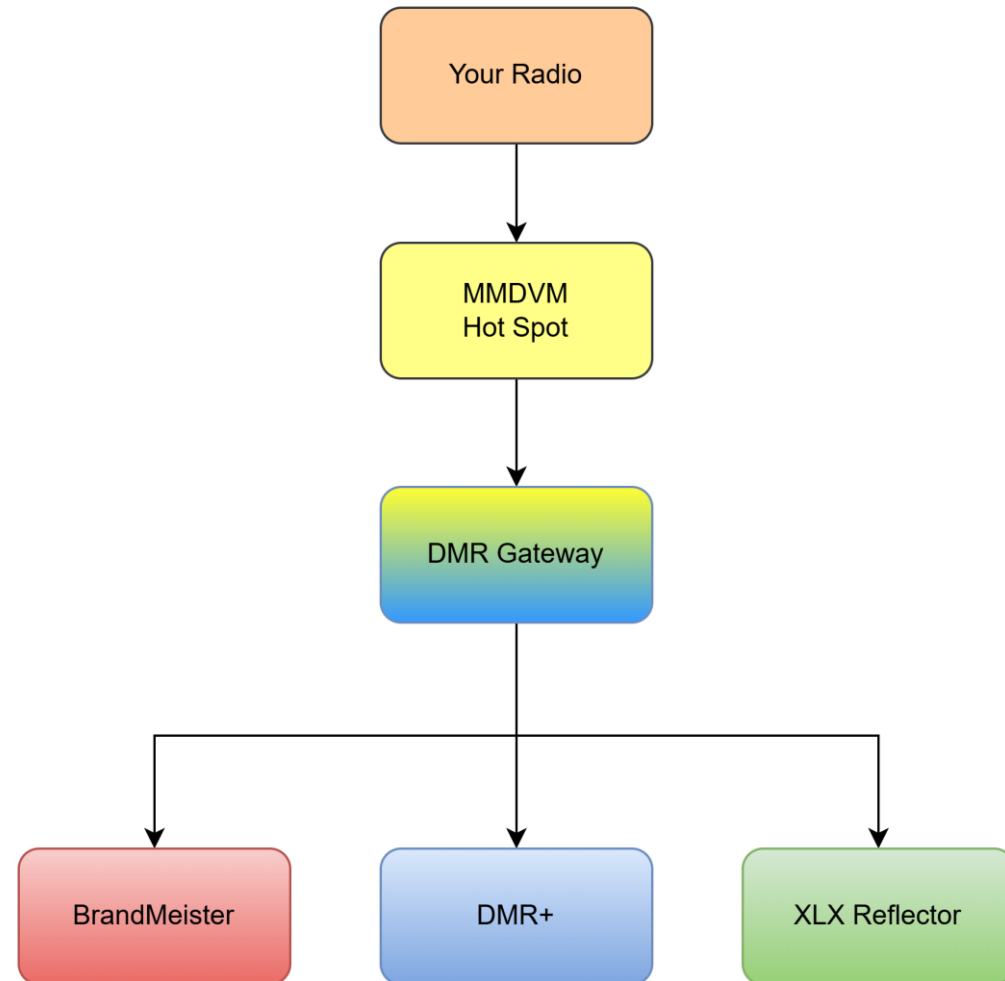
- DMR Gateway is software code that is part of Pi-Star and WPSD programs.
- The program that acts like a bridge, enabling your MMDVM-based hotspot or repeater to connect to multiple DMR networks simultaneously.
- Instead of being limited to one network, you can access various networks like “BrandMeister”, “DMR+”, “TGIF”, XLX, and others—all from the same device.
- Talk Groups from different networks can be controlled from the radio.
- Does not require users to change DMR Networks from the dashboard.
- If using a duplex MMDVM, you can use a Talk Group on TS1 from BrandMeister while using XLX814 Module B on TS2.

Communication Path

Your Radio communicates with your MMDVM Hotspot


The DMR Gateway Software on the hotspot routes your signal to the desired network


You select the network or talk group directly from your radio by changing channels or talk group IDs



Pi-Star DMR Gateway Selection

- Configuration from the DMR Gateway is found on the configuration Tab on Pi-Star.
- Scroll down to DMR Configuration and change the DMR Master to DMRGateway, using the dropdown menu.
- Once selected, click the Apply Changes button.

DMR Configuration	
Setting	Value
DMR Master:	DMRGateway 
Hotspot Security:	<input type="text"/>
BrandMeister Network:	Device Information Edit Device (BrandMeister Selfcare)
DMR ESSID:	3182154 <input type="text"/> None <input type="button" value="v"/>
DMR Colour Code:	1 <input type="button" value="v"/>
DMR EmbeddedLCOnly:	<input checked="" type="checkbox"/>
DMR DumpTAData:	<input checked="" type="checkbox"/>



DMR Gateway Configuration

Once the changes have been applied, the DMR Configuration section will be expanded.

This will allow you to select which DMR networks you would like to use.

There are **toggle switches** to allow you to select which networks you would like to be connected

It allows users to select the **DMR Masters** to be used.

The XLX service allows users to select the Startup module

DMR Configuration	
Setting	Value
DMR Master:	DMRGateway ▾
BrandMeister Master:	BM_3103_United_States ▾ ←
BM Hotspot Security:	<input type="text"/>
BrandMeister Network ESSID:	3182154 10 ▾
BrandMeister Network Enable:	<input checked="" type="checkbox"/> ←
BrandMeister Network:	Device Information Edit Device (BrandMeister Selfcare)
DMR+ Master:	DMR+_IPSC2-QUADNET ▾
DMR+ Network:	Options= <input type="text"/>
DMR+ Network ESSID:	3182154 10 ▾
DMR+ Network Enable:	<input checked="" type="checkbox"/>
XLX Master:	XLX_814 ▾
XLX Startup Module:	B ▾
XLX Master Enable:	<input checked="" type="checkbox"/>
DMR Colour Code:	1 ▾
DMR EmbeddedLCOnly:	<input checked="" type="checkbox"/>
DMR DumpTAData:	<input checked="" type="checkbox"/>

WPSD – DMR Configuration

DMR Configuration	
BrandMeister Network Settings	
BrandMeister Master:	BM_3102_United_States
BM Hotspot Security: Register for a Brandmeister Account...
BrandMeister Network ESSID:	3182154 05
BrandMeister Network Enable:	<input checked="" type="checkbox"/> Primary Network - No talkgroup prefix
BrandMeister Network:	Hotspot/Repeater Information Edit Hotspot/Repeater (BrandMeister Selfcare)
DMR+/FreeDMR/HBlink/Custom Network Settings	
DMR+ / FreeDMR / HBlink / Custom Master:	DMR+_IPSC2-QUADNET
Network Options:	Options=
ESSID:	3182154 None
DMR+ / FreeDMR / HBlink / Custom Network Enable:	<input type="checkbox"/> Uses "8" talkgroup prefix
SystemX Network Settings	
SystemX Master:	SystemX_United_States
Network Options:	Options=
ESSID:	3182154 None
SystemX Enable:	<input type="checkbox"/> Uses "4" talkgroup prefix
SystemX Network:	Options Generator
TGIF Network Settings	
ESSID:	3182154 None
TGIF Security Key: Get your TGIF Security Key here...
TGIF Network Enable:	<input checked="" type="checkbox"/> Uses "5" talkgroup prefix
TGIF Network:	TGIF SelfCare
XLX Network Settings	
XLX Master:	XLX_814
XLX Startup Module:	B
Time Slot:	<input checked="" type="radio"/> TS1 <input type="radio"/> TS2
XLX Master Enable:	<input checked="" type="checkbox"/>
General DMR Settings	
DMR Color Code:	1
DMR EmbeddedLOnly:	<input checked="" type="checkbox"/>
DMR DumpTAData:	<input checked="" type="checkbox"/>

WPSD – DMR Gateway

- WPSD DMR Gateway is better implemented for users.
- DRM Configuration settings allow users to select up to 6 different networks at once.
- Users can toggle on the DMR network they would like to use.
- Talk groups from the different network can be selected using the radio.

DMR Configuration		
BrandMeister Network Settings		
BrandMeister Master:	BM_3102_United_States	
BM Hotspot Security:	Register for a Brandmeister Account...
BrandMeister Network ESSID:	3182154 05	
BrandMeister Network Enable:	<input checked="" type="checkbox"/>	! Primary Network - No talkgroup prefix
BrandMeister Network:	Hotspot/Repeater Information Edit Hotspot/Repeater (BrandMeister Selfcare)	
DMR+/FreeDMR/HBlink/Custom Network Settings		
DMR+ / FreeDMR / HBlink / Custom Master:	DMR+_IPSC2-QUADNET	
Network Options:	Options=	
ESSID:	3182154 None	
DMR+ / FreeDMR / HBlink / Custom Network Enable:	<input type="checkbox"/>	! Uses "8" talkgroup prefix
SystemX Network Settings		
SystemX Master:	SystemX_United_States	
Network Options:	Options=	
ESSID:	3182154 None	
SystemX Enable:	<input type="checkbox"/>	! Uses "4" talkgroup prefix
SystemX Network:	Options Generator	
TGIF Network Settings		
ESSID:	3182154 None	
TGIF Security Key:	Get your TGIF Security Key here...
TGIF Network Enable:	<input checked="" type="checkbox"/>	! Uses "5" talkgroup prefix

WPSD – DMR Gateway

- Each DMR network selected will have different configuration settings.
- Most will require users to select a master server.
- Each XLX reflector acts as a master DMR server.
- XLX reflectors allow users to select the startup module and the Time Slot in use.

TGIF Network Settings	
ESSID:	3182154 None ▾
TGIF Security Key: 👁 Get your TGIF Security Key here...
TGIF Network Enable:	<input checked="" type="checkbox"/>
TGIF Network:	TGIF SelfCare 🔔 Uses "5" talkgroup prefix
XLX Network Settings	
XLX Master:	XLX_814 ▾
XLX Startup Module:	B ▾
Time Slot:	<input checked="" type="radio"/> TS1 <input type="radio"/> TS2
XLX Master Enable:	<input checked="" type="checkbox"/>
General DMR Settings	
DMR Color Code:	1 ▾
DMR EmbeddedLCOonly:	<input checked="" type="checkbox"/>
DMR DumpTAData:	<input checked="" type="checkbox"/>

DMR Gateway Code Plug

- Each DMR Network has a list of talk groups, [BrandMeister Talkgroup List - pistar.uk](http://BrandMeisterTalkgroupList-pistar.uk)
- When using DMR Gateway, the software adds a prefix number in front of a particular DMR network talk group.
 - This is called a rewrite
- The BrandMeister network does not use a rewrite or prefix in front of their talkgroups.
- Pi-Star and WPSD have different rewrite rules that are preset within the programs
- Rewrite rules can be customized if desired, only the prefix can be changed.

AnyTone Channel

This is an example of program for an AnyTone Radio. The Parrot TG is 5009990. TGIF parrot TG is a group call.

The 'Talk Group Edit' dialog box contains the following fields and options:

- Name: Parrot TGIF
- Call Type: Group Call
- TG/DMR ID: 5009990
- Call Alert: None
- Buttons: OK, Cancel, Previous, Next

The 'Channel Information Edit' dialog box contains the following fields and options:

- Channel Name: Parrot TGIF
- Receive Frequency: 449.97500
- Transmit Frequency: 444.97500
- Correct Frequency[Hz]: 0
- Channel Type: D-Digital
- Transmit Power: Low
- Band Width: 12.5K
- TX Permit: Always
- Scan List: None
- Exclude channel from roaming: off
- DMR MODE: Repeater
- Analog APRS Report Freq: 1
- DMR CRC Ignore: Off
- PTT Prohibit:
- Talk Around(Simplex):
- APRS RX:
- Work Alone:
- DataACK Disable:
- Auto Scan:
- Digital Contact: Parrot TGIF
- Radio ID: KR3L
- RX Color Code: 1
- TX Color Code: 1
- Slot: Slot1
- Receive Group List: Group List 1
- Digit Encryption: Off
- Extend Encryption: AES
- ARC4 Encryption: Off
- AES Digital Encryption: Off
- Multiple Key: Off
- Random Key: Off
- SMS Forbid: Off
- Send Talker Alias:
- Call Confirmation:
- Ranging:
- Slot Suit:
- SMS Confirmation:
- Idle TX:

BrandMeister

- When using BrandMeister talk groups there is no additional changes required.
 - USA Bridge - 3100
 - North America - 93
 - PA Statewide - 3142
- These talk groups can be accessed from your radio using the MMDVM
- Users are able to change talk groups as they normally would from the radio.

XLX Reflector

- XLX Reflectors use the prefix of 6 for TG using DMR radios.
- Code Plug Programming
 - TG will always start with 6 and each command is a private call.
 - TG 6 – Group Call for QSO
 - Each TG must have 5 digits in the code plug
- Change modules - It is a private call.
 - Module A is TG 64001
 - Module B is TG 64002
 - Module C is TG 64003... etc.
- Change Reflectors – It is a private call and it starts with 68
 - XLX814 is TG 68814
 - XLX045 is TG 68045
 - XLX089 is TG 68089
- XLX Reflectors has specific command, use private call for each command.
 - TG 64000 – Disconnect
 - TG 65000 – Current connection status

TGIF

- TGIF network has a total of 2250 talk groups
 - Requires registration before using the network
- Pi-Star
 - Each TG starts with a 4 and has a total for 7 digits
- WPSD
 - Each TG starts with a 5 and has a total for 7 digits

TG Name	TGIF TG	Pi-Star TG	WPSD TG
Fire Side Chat	326	4000326	5000326
Tech Talk	31353	4031353	5031353
America Link	31656	4031656	5031656
PA Statewide	3142	4003142	5003142

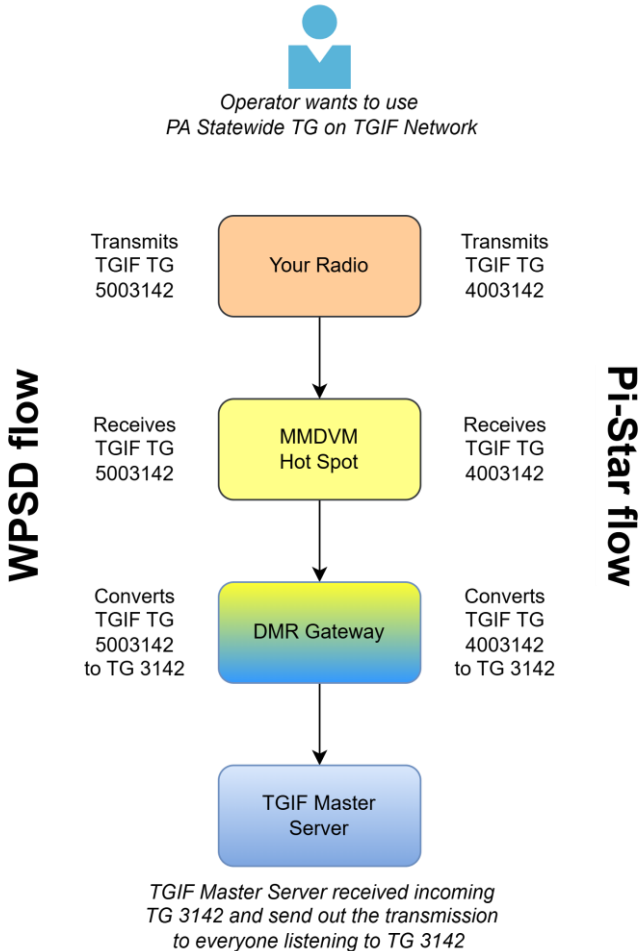
DMR+

- There are 270 Talkgroups available on DMR+
- Pi-Star
 - The prefix is 8 and each TG has 4 digits, a total of 5 digits for each TG
- WPSD
 - The prefix is 800 and each TG has 4 digits, a total of 7 digits for each TG

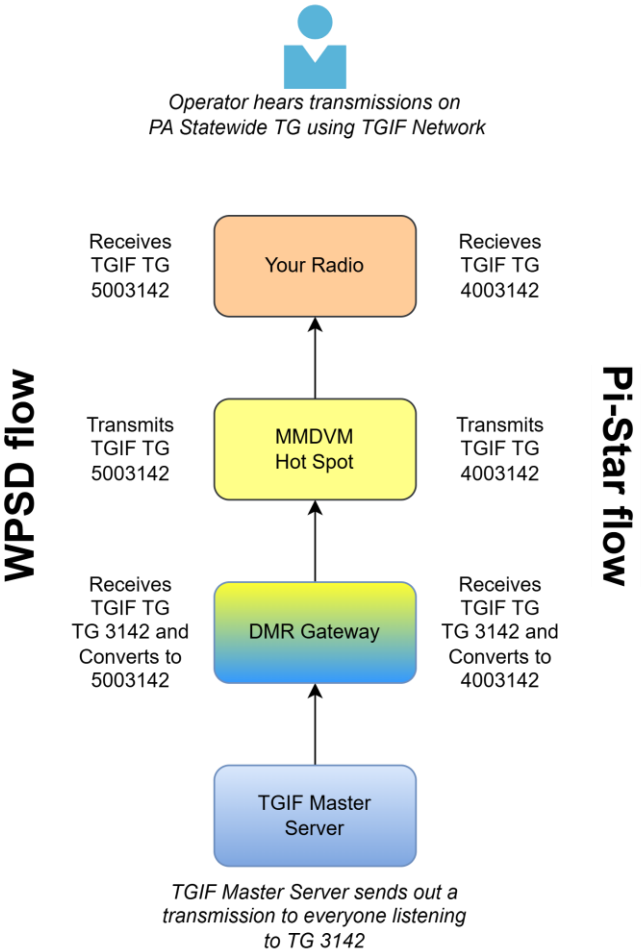
TG Name	DMR+ TG	Pi-Star	WPSD
World Wide	1	80001	8000001
USA Wide	133	80133	8000133
Quadnet	320	80320	8000320
Parrot	9990	89990 – GC	8009990 - GC

DMR Gateway Process Flow

Transmission Flow



Receive Flow



Questions

