

Configuring a Pi-Star Hotspot for Two DMR Networks

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Disclaimer and Credits

- This tutorial requires using expert mode on your hotspot and manually editing files. Backups are strongly recommended.
- Many of these concepts have been presented by others, including Bob AF9W, and Jeff VE6DV. I do not claim this to be original content.

Goal of this Tutorial

- Configure a single Pi-Star MMDVM unit with access to both Brandmeister and PNW networks, via channels on the radio, rather than continual dashboard reconfigurations
- Configure Brandmeister talkgroups to Brandmeister, and PNW talkgroups to PNW

Assumptions

- You are using:
 - Pi-Star-based single slot MMDVM unit running current firmware (4.1.2)
- You have familiarity with:
 - DMR
 - The Brandmeister and PNW networks
 - The Radio CPS
 - The Pi-Star dashboard

Backups

- Pi-Star
 - Backup your current SD card using Win32DiskImager
 - or Backup your current settings using Pi-Star export
 - or Use a second SD card
- Radio
 - Backup your current codeplug

Routing to the rescue

- All Brandmeister traffic goes to Brandmeister servers
- All PNW Traffic goes to PNW servers
- Hotspot is connected to both networks

DMR Master
BM United States ..
PNW Suzy



DMR Gateway Routes Traffic

- DMR Gateway is an optional configuration within Pi-Star.
- “DMR Gateway will only pass traffic to the different networks if it's referenced in a rewrite rule in the .ini file”

<https://github.com/g4klx/DMRGateway/wiki/Rewrite-Rules>

DMR Gateway Syntax

[DMR Network 1]



Section identifier

Enabled=1

Name=BM_United_States_3103

Address=74.91.118.251

Port=62031

Password="passw0rd"

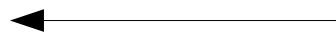
TGRewrite0=2,9,2,9,1



Map a talkgroup (for our purposes)

PassAllPC0=1

PassAllTG0=1



Pass all unmapped TG's on Timeslot 1

PassAllPC1=2

PassAllTG1=2



Pass all unmapped TG's on Timeslot 2

TGRewrite

TGRewrite0 = 2, 9, 2, 9, 1

Rule Name TS (from) TG (from) TS (to) TG (to) Range

- This rule, TGRewrite0, maps calls from Timeslot 2, Talkgroup 9 to Timeslot 2, Talkgroup 9, and does that for a total of 1 group.
- DMRGateway only passes traffic where there is a specific rule, so this rule is not as trivial as it might seem. It causes this TS/TG to be mapped to the network we choose.
- Rule names must be unique

DMR Gateway Solution

- By default, set all traffic to Brandmeister
- Override default rule with specific rules for PNW talkgroups

What Information is Needed?

- What talkgroups will be supported
- What are the MMDVM server credentials

PNW MMDVM Talkgroups

9999	Audio Test	103187	PNW 2
3191	Cascades	31771 (bm)	PNW Regional
3168	I-5	8951	TAC 1
3116 (bm)	Idaho	8952	TAC 2
3141 (bm)	Oregon	8958	TAC 8
9998	Parrot	3153 (bm)	Washington 1
3187	PNW 1	103153	Washington 2

(bm) shared with Brandmeister

<http://www.pnwdigital.net/talkgroups/index.html>

http://www.pnwdigital.net/sv/tgshow_mmdvm.php

PNWDigital MMDVM System Info

Welcome to PNW Digital MMDVM Systems!

You are being granted use of the MMDVM Servers, as a member of PNW Digital.

===== PNW Digital MMDVM Server Information =====

<i>Bridget / PNW</i>	←	The friendly name of the server
DNS Name 1 =	←	The IP address or hostname
UDP Port =	←	The port number
Password =	←	The password

Suzy / Eastside
DNS Name 1 =
DNS Name 2 =
UDP Port =
Password =

Wes / Westside
DNS Name =
UDP Port =
Password =

- Welcome email
 - PNWDigital MMDVM System Approval and Information
- Choose one:
 - PNW_Bridget
 - PNW_Suzy_East
 - PNW_Suzy_West
 - PNW_Wes

Pi-Star Configuration

Pi-Star Digital Voice Dashboard for W7NCX

Dashboard | Admin | Configuration

DMR Configuration

Setting	Value
DMR Master:	DMRGateway
BrandMeister Master:	BM_United_States_3103
BM Hotspot Security:
BrandMeister Network ESSID:	315.05
BrandMeister Network Enable:	<input checked="" type="checkbox"/>
BrandMeister Network:	Repeater Information Edit Repeater (BrandMeister Selfcare)

Apply Changes

Pi-Star DMR Gateway Configuration

Pi-Star Digital Voice - Configuration

[Dashboard](#) | [Admin](#) | [Expert](#) | [Power](#) | [Update](#) | [Backup/Restore](#) | [Factory Reset](#)

Quick Edit: [DStarRepeater](#) | [ircDDBGateway](#) | [TimeServer](#) | [MMDVMHost](#) | [DMR GW](#) | [YSF GW](#) | [P25 GW](#) | [NXDN GW](#) | [DAPNET GW](#)
Full Edit: [DMR GW](#) | [PiStar-Remote](#) | [WiFi](#) | [BM API](#) | [DAPNET API](#) | [System Cron](#) | [RSSI Dat](#) **Tools:** [CSS Tool](#) | [SSH Access](#)

Pi-Star Digital Voice - Expert Editors

[Dashboard](#) | [Admin](#) | [Update](#) | [Upgrade](#) | [Backup/Restore](#) | [Configuration](#)

Quick Edit: [DStarRepeater](#) | [ircDDBGateway](#) | [TimeServer](#) | [MMDVMHost](#) | [DMR GW](#) | [YSF GW](#) | [P25 GW](#) | [NXDN GW](#) | [DAPNET GW](#)
Full Edit: [DMR GW](#) | [PiStar-Remote](#) | [WiFi](#) | [BM API](#) | [DAPNET API](#) | [System Cron](#) | [RSSI Dat](#) **Tools:** [CSS Tool](#) | [SSH Access](#)

```
[General]
RptAddress=127.0.0.1
RptPort=62032
LocalAddress=127.0.0.1
LocalPort=62031
RuleTrace=0
Daemon=1
Debug=0
RFTimeout=20
NetTimeout=20

[Log]
DisplayLevel=0
FileLevel=1
FilePath=/var/log/pi-star
FileRoot=DMRGateway

[Voice]
E-1-1-1
```

Brandmeister entries (unchanged)

[DMR Network 1]

Enabled=1

Name=BM_United_States_3103

Address=74.91.118.251

Port=62031

Password="passw0rd"

Id=315****05

Debug=0

TGRewrite0=2,9,2,9,1

PCRewrite0=2,94000,2,4000,1001

TypeRewrite0=2,9990,2,9990

SrcRewrite0=2,4000,2,9,1001

PassAllPC0=1

PassAllTG0=1

PassAllPC1=2

PassAllTG1=2

← DMR Network 1 will be Brandmeister

← Your Brandmeister hotspot security password

← Your DMR ID (7 or 9 digits)

DMR Network 3 – Starting Point

[DMR Network 3]

Enabled=0

Name=HBLink

Address=1.2.3.4

Port=5555

Password=PASSWORD

Location=0

Debug=0

TGRewrite=2,11,2,11,1

TGRewrite0=2,11,2,11,1

PNW Digital Config - First Changes

[DMR Network 3]	←	DMR Network 3 will become PNW
Enabled=1	←	1 to enable, 0 to disable
Name=<MMDVM_NAME>	←	The friendly name of the server
Address=<HOSTNAME>	←	The IP address or hostname
Port=<PORT>	←	The port number
Password=<PASSWORD>	←	The password
Location=0		
Debug=0		

PNW TGRewrite Rules

TGRewrite01=2,9999,2,9999,1

Rewrite rule for Audio Test

TGRewrite02=2,3191,2,3191,1

Rewrite rule for Cascades

TGRewrite03=2,3116,2,3116,1

Rewrite rule for Idaho

TGRewrite04=2,3168,2,3168,1

Rewrite rule for I-5

TGRewrite05=2,3141,2,3141,1

Rewrite rule for Oregon

TGRewrite06=2,9998,2,9998,1

Rewrite rule for Parrot

More PNW TGRewrite Rules

TGRewrite07=2,3187,2,3187,1

Rewrite rule for PNW 1

TGRewrite08=2,103187,2,103187,1

Rewrite rule for PNW 2

TGRewrite09=2,31771,2,31771,1

Rewrite rule for PNW Regional

TGRewrite10=2,8951,2,8951,1

Rewrite rule for TAC 1

TGRewrite11=2,8952,2,8952,1

Rewrite rule for TAC 2

TGRewrite12=2,8958,2,8958,1

Rewrite rule for TAC 8

TGRewrite13=2,3153,2,3153,1

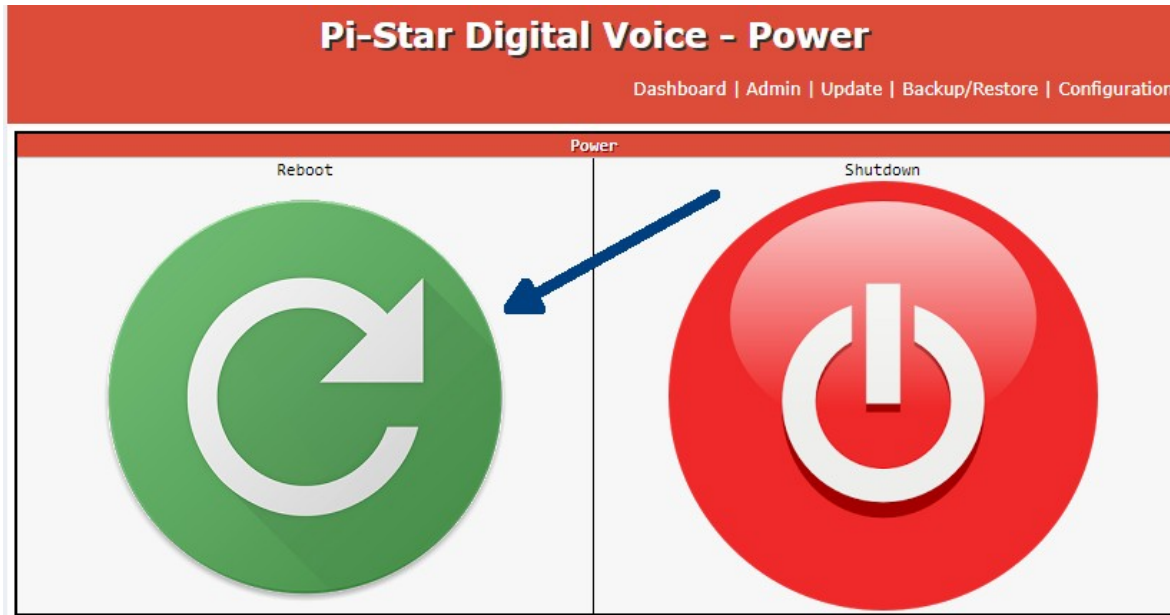
Rewrite rule for Washington 1

TGRewrite14=2,103153,2,103153,1

Rewrite rule for Washington 2

Pi-Star Wrap Up

Apply Changes



Codeplug Changes

- Add Private Call to TG 4000
- Add channels for your favorite BM talkgroups
- Add new channels to your hotspot zone
- Add RX Groups or use promiscuous monitor

Caveats: Pi-Star

- Pi-Star Expert Editors are available in both Quick Edit and Full Edit styles
- Quick Edit is not compatible with the changes made in Full Edit
- Don't use Quick Edit for DMR GW

The image shows a screenshot of the Pi-Star Digital Voice - Expert Editors interface. The title bar reads "Pi-Star Digital Voice - Expert Editors". Below the title bar, there is a navigation menu with the following items: Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration. The main content area is divided into two sections: "Quick Edit" and "Full Edit". The "Quick Edit" section lists: DSL Repeater | ircDDBGateway | TimeServer | MMDVMHost | DMR GW | YSF GW | P25 GW | NXDN GW | DAPNET GW. The "Full Edit" section lists: DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Data. There are also "Tools" listed: CSS Tool | SSH Access. Two blue arrows point to the "DMR GW" link in the "Quick Edit" section, labeled "Good", and the "DMR GW" link in the "Full Edit" section, labeled "Bad".

Good **Pi-Star Digital Voice - Expert Editors** **Bad**

Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration

Quick Edit: DSL Repeater | ircDDBGateway | TimeServer | MMDVMHost | DMR GW | YSF GW | P25 GW | NXDN GW | DAPNET GW

Full Edit: DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Data **Tools:** CSS Tool | SSH Access

Caveats: Concurrency

- A single slot device can only do one thing at a time—it can connect to both Brandmeister and PNW, but not both at the same time. If either is chatty, good luck on using the other!

Caveats: Complexity

- Hotspots are more complex than repeaters
- Multi-network hotspots are more complex than hotspots
- Use the web interfaces for your hotspot, Brandmeister, and PNW to monitor
- Log files available in `/var/log/pi-star`

Caveats: PNW

- These changes will route only these specific talkgroups to PNW
- If PNW changes the MMDVM talkgroup deck, mapping changes might be necessary, to add or remove supported talkgroups

Caveats: Shared Talkgroups

- The shared talkgroups are mapped to be accessed via PNW, not Brandmeister
 - 3116 ID, 3141 OR, 31771 PNWR, 3153 WA
- Also accessing these talkgroups via Brandmeister would require further TGRewrite entries
 - Rewrite with a prefix?

Questions

