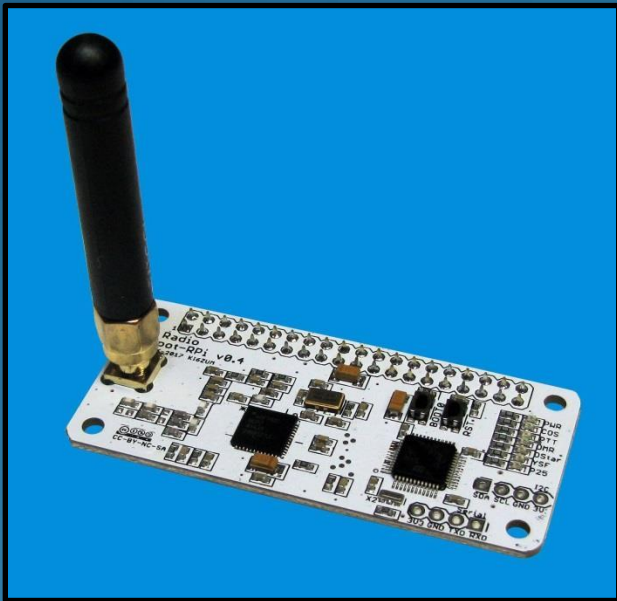


# ZUMspot/PiStar

ZUMspot/Pi-Star Bring-up and initialization  
Updated for Pi-Star v3.4.15

David Hull, KC6N



# Preface

This document covers initial setup and maintenance of ZUMspot based “hotspots” running on Raspberry PiZeroW (or Pi3) platforms using Pi-Star software. Parts I through IV describe steps needed to bring up a new system. This is followed by a series of appendices that cover other topics likely to be encountered during subsequent operation.

# Contents

- Preparing your ZUMspot for first use
  - Part I: Preparing a Pi-Star  $\mu$ SD card
  - Part II: Setting up your WiFi
  - Part III: Configuring/Customizing Pi-Star
  - Part IV: Configuring your radios
- Appendices: (specific topics and issues)
  - Updating FW, Setting up Brandmeister, Access to special features, etc.

# ZUMspot/PiStar

## Part I

### Preparing a $\mu$ SD card with a Pi-Star Image

Do this section if you are starting anew with a blank  $\mu$ -SD card, or you are upgrading to a new version using a new blank card. If you are starting from a kit that came with an imaged card, you can skip to Part II.

# Download the Pi-Star Image (1)

Go to the following URL:

<http://www.pistar.uk/index.php>

Click: "Downloads", Click: "Download Pi-Star"

## PiStar.UK - Pi-Star Digital Voice Software

Home

### Pi-Star Downloads

Information

Help

Pi-Star Tools

BrandMeister Tools

DMR+ Tools

D-Star Tools

Downloads

Credits

Links

#### Images available to Download

Pi-Star NanoPi Air V3.4.11 06-Mar-2018.zip  
Pi-Star\_NanoPi\_V3.4.11\_06-Mar-2018.zip  
Pi-Star\_Odroid XU4\_V3.4.11\_06-Mar-2018.zip  
Pi-Star OrangePi Zero V3.4.11\_06-Mar-2018.zip  
Pi-Star\_RPi\_V3.4.10\_24-Feb-2018.zip  
Pi-Star\_RPi\_V3.4.11\_06-Mar-2018.zip  
dymega-flash-tools.zip

#### Information

Remember, all you need to do, is download the zipped version of the image that is most suitable for your Pi / Single Board Computer, Unzip the download, and then flash the image to your SD card (using your preferred image writing tool - see links below for some basic instructions), boot the Pi, wait 30-40 secs and then login to the admin portal in order to finish the setup your Pi-Star.

here: <http://pi-star/admin/>

Default Username: pi-star  
Default Password: raspberry

For help getting started, see this \*EXCELLENT\* video by Craig (W1MSG): [Here](#)

Windows Imaging Guide: [Here](#)  
Mac OS Imaging Guide: [Here](#)  
Linux Imaging Guide: [Here](#)

For support, please join our Facebook Support Group:  
<https://www.facebook.com/groups/pistar/>  
and/or make use of the Wiki: <http://wiki.pistar.uk>.

## PiStar.UK - Pi-Star Digital Voice Software

Home

Information

Help

Pi-Star Tools

BrandMeister Tools

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D-Star Tools

Downloads

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Credits

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### Home

Pi-Star is a software image built initially for the Raspberry Pi (produced by the Raspberry Pi Foundation). The design concept is simple, provide the complex services and configuration for Digital Voice on Amateur radio in a way that makes it easily accessible to anyone just starting out, but make it configurable enough to be interesting for those of us who cant help but tinker.

Pi-Star can be what ever you want it to be, from a simple single mode hotspot running simplex providing you with access to the increasing number of Digital Voice networks, up to a public duplex multimode repeater!

The world is at your fingertips, and the choices are yours!

If you like to get your hands dirty, delve beneath the simple to use web based dashboard, Pi-Star provides some unique tools to make administration easy, but we also encourage those who want to understand what the system is and how it works to be as involved as they want to be!

Most importantly, have fun using Pi-Star!

### Pi-Star Digital Voice Dashboard for MW0MWZ

Mode	Enabled	Col	Sign	Logoff	Active	Starnet	Groups	Info	BTID	BTID
PiStar	0	0	0	0	0	0	0	Pi-Star User Group on D-Star	30	30
DMR	0	0	0	0	0	0	0	Blackwood Club Members Group	30	30

Time (GMT)	Mode	Col	Sign	Target	Snc	Dur(S)	BER
2017-05-30 16:20:19	D-Star	0	0	0	0	0	0.26
2017-05-30 16:27:55	DMR Slot 2	0	0	0	0	0	0.16
2017-05-30 16:25:15	DMR Slot 2	0	0	0	0	0	0.06
2017-05-30 16:24:52	DMR Slot 2	0	0	0	0	0	0.06
2017-05-30 16:19:35	DMR Slot 2	0	0	0	0	0	0.06
2017-05-30 16:17:23	D-Star	0	0	0	0	0	0.06
2017-05-30 16:16:36	D-Star	0	0	0	0	0	0.06
2017-05-30 16:11:39	D-Star	0	0	0	0	0	0.26
2017-05-30 16:10:44	D-Star	0	0	0	0	0	0.06
2017-05-30 16:10:42	D-Star	0	0	0	0	0	0.06
2017-05-30 16:09:28	D-Star	0	0	0	0	0	0.06
2017-05-30 16:05:55	D-Star	0	0	0	0	0	0.06
2017-05-30 15:56:09	D-Star	0	0	0	0	0	0.36
2017-05-30 15:54:49	D-Star	0	0	0	0	0	0.06
2017-05-30 15:49:35	D-Star	0	0	0	0	0	0.06
2017-05-30 15:48:29	D-Star	0	0	0	0	0	0.06
2017-05-30 15:47:01	D-Star	0	0	0	0	0	0.06
2017-05-30 15:40:50	D-Star	0	0	0	0	0	0.06
2017-05-30 15:36:33	D-Star	0	0	0	0	0	0.06

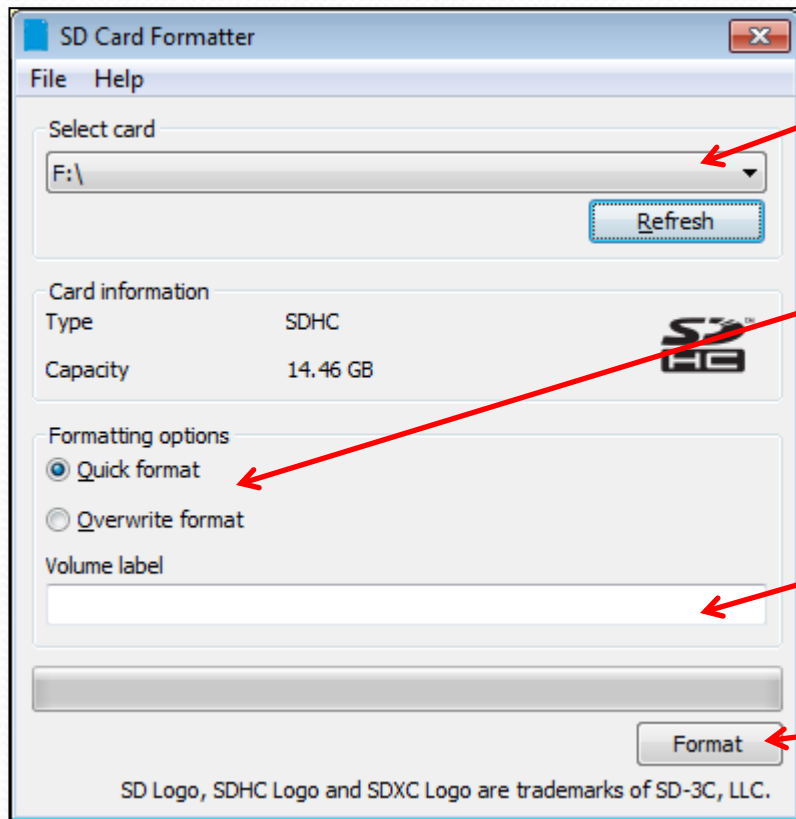
Time (GMT)	Mode	Col	Sign	Target	Snc	Dur(S)	BER
2017-05-30 16:18:42	D-Star	0	0	0	0	0	0.06

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index.php last modified on 12/09/17 at 19:14 +0000



# Format a blank $\mu$ SD Card

Use “SDFormatter” to format a  $\mu$ -SD card prior to loading an image.



1. Set the drive letter for your  $\mu$ -SD card here

2. Select a format option

3. Leave this blank, the Pi-Star image will change it to “boot” when it loads.

4. Select “Format”

# Transferring the image

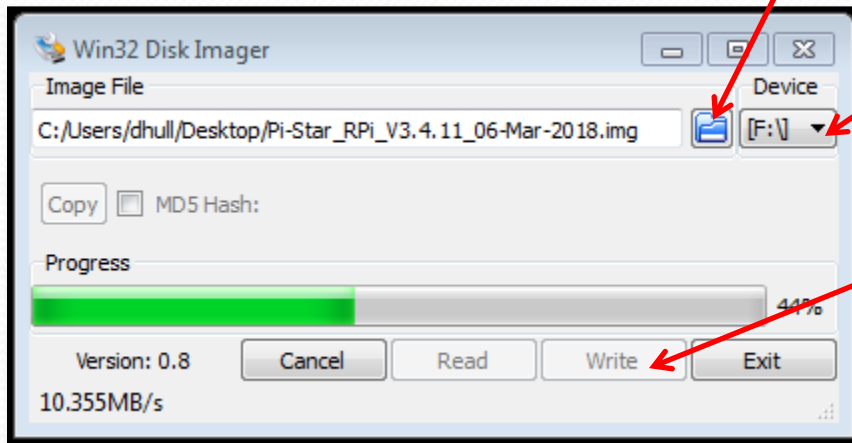
- The XXX.img file is a compressed  $\mu$ -SD card image which must be uncompressed by an imager program to create the file structure on the final  $\mu$ -SD card.
- There are several options out there, here are three that all work very well:
  - Win32 Disk Imager
  - SDImager
  - Etcher



# Using Win32 Disk Imager

Option 1: Writing an image to a  $\mu$ -SD card using “Win32 Imager”.

1. Navigate to your image file (for example): [Pi-Star\\_RPi\\_V3.4.11\\_06-Mar-2018.img](#)



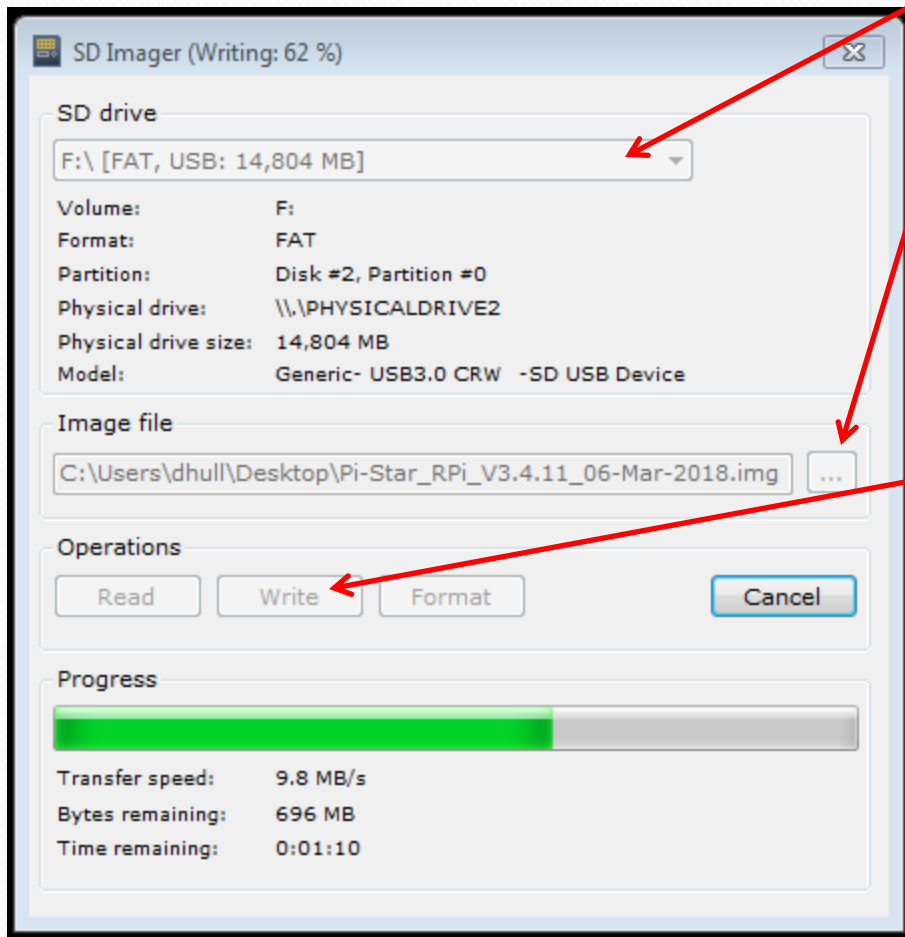
2. Set the drive letter of your  $\mu$ -SD card: “F” (in this case)

3. Select “Write” and be prepared to wait a while as the progress bar creeps along.

Note: To back up an image, simply reverse the process: In step 1, designate a the path and filename to a spot on your HDD where you want to save the image, in step 2, select the drive letter for the  $\mu$ -SD card. Click “Read”. This will copy an image of the card to an .img file on your HDD. You can then use the “Write” process to “clone” another card. Note: I never do this, I always image a new card.

# Using SDImager

Option 2: Writing an image to a  $\mu$ -SD card using SD Imager.



1. Set the drive letter of your  $\mu$ -SD card: "F" (in this case)

2. Navigate to your image file (i.e.): [Pi-Star\\_RPi\\_V3.4.11\\_06-Mar-2018.img](#)

3. Select "Write" and be prepared to wait a while as the progress bar creeps along.

Note: You can back up an image and clone cards as described for Win32 Disk Imager on the previous slide. Note that this application can also format a card. This application does everything you need.

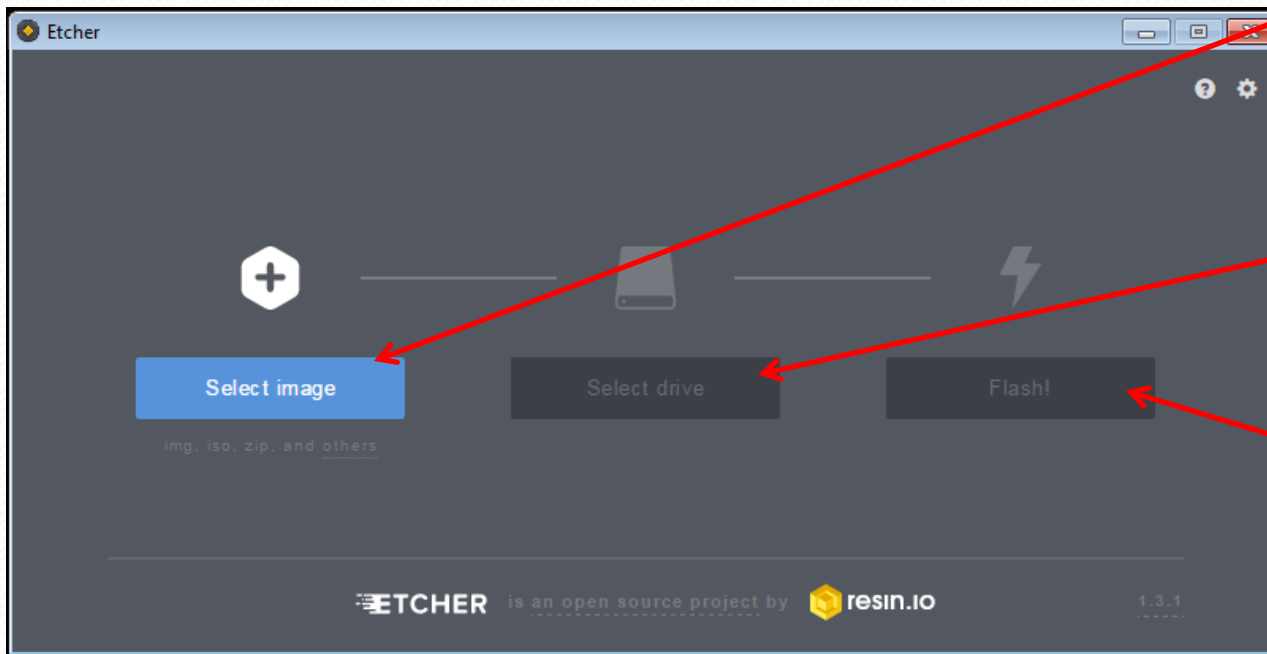
# Using Etcher

Option 3: Writing an image to a  $\mu$ -SD card using Etcher.

1. Click “Select image and Navigate to your image file (i.e.): [Pi-Star\\_RPi\\_V3.4.11\\_06-Mar-2018.img](#)”

2. Select the drive letter of your  $\mu$ -SD card.

3. Click Flash and wait for the process to complete.



This is a nice applet that has a very simple interface that a lot of people like. It also validates the image as part of the flash process and can be initiated from the .zip file. I prefer the “portable” version since I can take it with me on a thumb drive.

# Websites:

- Win32DiskImager:  
<https://sourceforge.net/projects/win32diskimager/>
- SDImager:  
<https://sourceforge.net/projects/sdimager/>
- Etcher: <https://etcher.io/>
  
- SDFormatter:  
[https://www.sdcard.org/downloads/formatter\\_4/](https://www.sdcard.org/downloads/formatter_4/)

# ZUMspot/PiStar

## Part II

### Configuring your WiFi on a pre-Imaged $\mu$ -SD card

This section assumes you have performed Part I or your kit came with a pre-imaged card.

## Note:

Your hotspot must be able to make a WiFi connection in order to be configured. There are several ways to do this. This section outlines a the “classic” method that will work with any version of Pi-Star. Another (possibly simpler) method referred to as “AutoAP” became available beginning with Pi-Star v3.4.11, and is described in Appendix G.

# Note on SW versions:

Many of the screen shots in the first sections are based on release 3.4.11. Some of the material in the appendices are based on later versions.

Everything in the PDF should work on versions up to and including the version referenced on the title page. It is a bit of work to replace the screenshots each time a new release is made so I don't do it if the older ones are still good. As a result, if you are bringing up something later than 3.4.11, your screens might look slightly different in some cases.

# Gather up the following:

- Basic ZUMspot kit
  - ZUM Board (w/ Antenna)
  - Raspberry Pi ZeroW (w/ connector)
  - $\mu$ SD card (w/ Image)
  - Case (Optional)
- Windows PC with Internet access
- USB  $\mu$ SD card reader
- WiFi Credentials for at least one WiFi connection (SSID and PSK), DMR ID



# Setting up your WiFi (Slide 1)

Go to the following URL:

<http://www.pistar.uk/index.php>

Click Pi-Star Tools, select "WiFi Builder"

## PiStar.UK - Pi-Star Digital Voice Software

- Home
- Information
- Help
- Pi-Star Tools
  - WiFi Builder**
  - Pi-Star Usage Stats
- BrandMeister Tools
- DMR+ Tools
- D-Star Tools
- Downloads
- Credits
- Links

### Pi-Star WiFi Builder

This tool is used to create your "wpa\_supplicant.conf" for use with Pi-Star. All you need to do is enter your SSID (this is the name of your Wireless Network) and the matching PSK (this is the Pre-Shared Key, or Password) for this network, when you hit "Submit" the generated config file will download to your computer.

If you require a config to connect to any available open network, leave the SSID and PSK lines empty, the generated config will allow your Pi to connect to any available open network.

All you need to do then, is drop this onto the "Boot" volume of your Pi-Star SD card - this will appear as you complete writing the SD Card.

Once the Pi-Star system boots up, it will add the config file for the WiFi and reboot.

SSID:	<input type="text"/>
PSK:	<input type="text"/>
<input type="button" value="Submit Query"/>	

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wifi\_builder.php last modified on 23/10/17 at 20:12 +0000

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- Home
- Information
- Help
- Pi-Star Tools
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- Credits
- Links

### Home

Pi-Star is a software image built initially for the Raspberry Pi (produced by the Raspberry Pi Foundation). The design concept is simple, provide the complex services and configuration for Digital Voice on Amateur radio in a way that makes it easily accessible to anyone just starting out, but make it configurable enough to be interesting for those of us who cant help but tinker.

Pi-Star can be what ever you want it to be, from a simple single mode hotspot running simplex providing you with access to the increasing number of Digital Voice networks, up to a public duplex multimode repeater!

The world is at your fingertips, and the choices are yours!

If you like to get your hands dirty, delve beneath the simple to use web based dashboard, Pi-Star provides some unique tools to make administration easy, but we also encourage those who want to understand what the system is and how it works to be as involved as they want to be!

Most importantly, have fun using Pi-Star!

### Pi-Star Digital Voice Dashboard for MW0MWZ

Dashboard | Admin | Config

Col List	Logoff	Info	UOT	STOT
PISTAR B	PISTAR B	Pi-Star User Group on D-Star	30	30
DMR B	DMR B	Blackwood Club Members Group	30	30

#### Active StarNet Groups

Time (CST)	Mode	Collisgn	Target	Src	Dur(C)	Loss	BER
2017-05-30 16:30:10	D-Star	44000/DVMS	COCQ via REF001 C	Net	0.8	0%	0.2%
2017-05-30 16:27:58	DMR Slot 2	11400	TG 91	Net	0.5	0%	0.1%
2017-05-30 16:25:15	DMR Slot 2	40045	TG 91	Net	10.5	0%	0.0%
2017-05-30 16:17:50	D-Star	44000/DVMS	COCQ via REF001 C	Net	11.4	0%	0.0%
2017-05-30 16:17:23	D-Star	44000/DVMS	COCQ via REF001 C	Net	1.4	0%	0.0%
2017-05-30 16:11:39	D-Star	12617/274	COCQ via REF001 C	Net	1.9	0%	0.3%
2017-05-30 16:10:44	D-Star	44000/DVMS	COCQ via REF001 C	Net	7.1	0%	0.0%
2017-05-30 16:10:42	D-Star	44000/DVMS	I	Net	0.7	0%	0.0%
2017-05-30 16:09:28	D-Star	44000/DVMS	COCQ via REF001 C	Net	1.2	0%	0.0%
2017-05-30 16:05:55	D-Star	44000/DVMS	COCQ	Net	7.9	0%	0.0%
2017-05-30 15:53:49	D-Star	44000/DVMS	COCQ	Net	0.1	0%	0.0%
2017-05-30 15:54:49	D-Star	44000/DVMS	COCQ	Net	1.2	0%	0.0%
2017-05-30 15:49:35	D-Star	44000/DVMS	COCQ	Net	0.8	0%	0.0%
2017-05-30 15:48:20	D-Star	44000/DVMS	COCQ	Net	0.4	0%	0.0%
2017-05-30 15:47:48	D-Star	44000/DVMS	COCQ	Net	0.2	0%	0.0%
2017-05-30 15:40:58	D-Star	44000/DVMS	COCQ	Net	0.4	0%	0.0%
2017-05-30 15:36:33	D-Star	44000/DVMS	COCQ	Net	6.8	0%	0.0%

#### Last 20 calls heard via this Gateway

Time (CST)	Mode	Collisgn	Target	Src	Dur(C)	Loss	BER
2017-05-30 16:10:42	D-Star	44000/DVMS	I	Net	0.7	0%	0.0%

#### Last 20 calls that accessed this Gateway

Time (CST)	Mode	Collisgn	Target	Src	Dur(C)	Loss	BER
2017-05-30 16:10:42	D-Star	44000/DVMS	I	Net	0.7	0%	0.0%

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2016-2017.  
Pi-Star Dashboard developed by Andy Taylor (MW0MWZ) 2016-2017.  
Pi-Star Dashboard powered by Andy Taylor (MW0MWZ) 2016-2017.  
Send input data here for the Reverse Caller  
and your copy of Pi-Star logs here.

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index.php last modified on 12/09/17 at 19:14 +0000

# Setting up your WiFi (Slide 2)

1. Enter your WiFi Credentials: SSID, and Password (PSK) for the network you want to use for bring-up.

2. Click “Submit Query”

3. When the save dialogue appears, save the resulting “wpa\_suplicant.conf” file in a location you will remember.

You will move this to your imaged card so that your WiFi will start up in the subsequent steps.

## PiStar.UK - Pi-Star Digital Voice Software

- Home
- Information
- Help
- Pi-Star Tools
- BrandMeister Tools
- DMR+ Tools
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- Downloads
- Credits
- Links

### Pi-Star WiFi Builder

This tool is used to create your "wpa\_supplicant.conf" for use with Pi-Star. All you need to do is enter your SSID (this is the name of your Wireless Network) and the matching PSK (this is the Pre-Shared Key, or Password) for this network, when you hit "Submit" the generated config file will download to your computer.

If you require a config to connect to any available open network, leave the SSID and PSK lines empty, the generated config will allow your Pi to connect to any available open network.

All you need to do then, is drop this onto the "Boot" volume of your Pi-Star SD card - this will appear as you complete writing the SD Card.

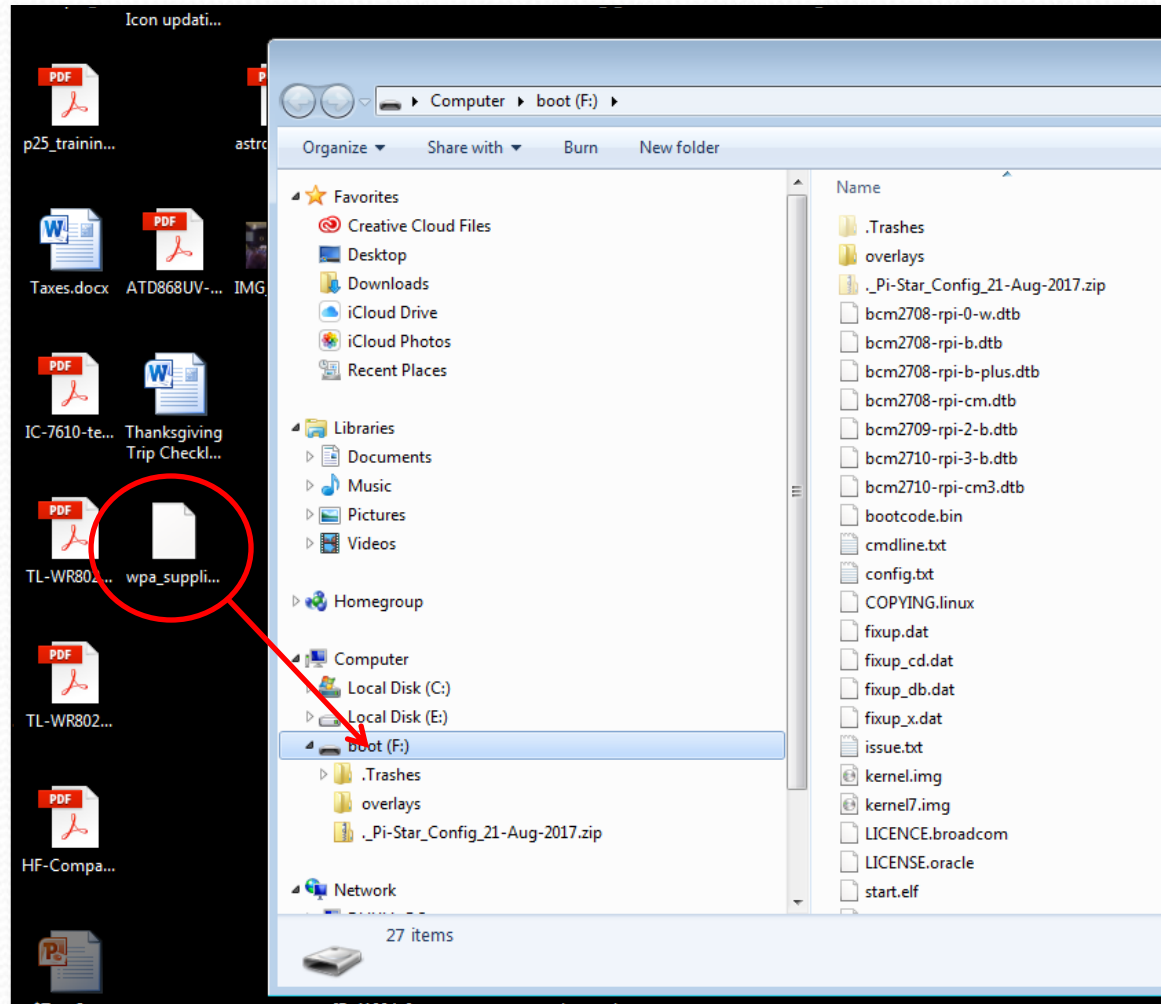
Once the Pi-Star system boots up, it will add the config file for the WiFi and reboot.

SSID:	<input type="text"/>
PSK:	<input type="text"/>
<input type="button" value="Submit Query"/>	

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wifi\_builder.php last modified on 23/10/17 at 20:12 +0000

# Setting up your WiFi (Slide 3)

1. Place your card containing the Pi-Star image in a  $\mu$ SD card reader in your PC.
2. Drag and Drop the “wpa\_supplicant.conf” file into the root directory of your  $\mu$ SD card.
3. Install the  $\mu$ SD card containing your image and the wpa\_supplicant file into your Raspberry Pi Zero W.



# ZUMspot/PiStar

Part III

Bringing up ZUMspot/Pi-Star the first time

You now have an imaged card with a WiFi file, let's configure pi-star with your customized setup.

# Before you start:

- Install the ZUMspot onto the Raspberry Pi Zero/W – case not needed at this point.
- Install The ZUMspot's antenna.
- Install the  $\mu$ SD card you just prepared with the image and the [“wpa\\_supplicant.conf”](#) file into the Raspberry Pi Zero/W
- Power up the assembled contraption and wait about 3 minutes for it to complete it's boot sequence.

# Once “Boot” is complete:

- Make sure that your PC is on the same WiFi as your ZUMspot/Pi-Star HotSpot
- Open your browser (any browser) and point it to: <http://pi-star> (on Windows) or <http://pi-star.local> (on Apple iOS).
- You will get the initial Pi-Star information screen indicating that Pi-Star is ready to be set up (see next page) momentarily followed by a Log-In dialog.

# Initial Pi-Star Info Screen:

Hostname: pi-star Pi-Star:3.4.11 / Dashboard: 20180305

## Pi-Star Digital Voice Dashboard for M1ABC

Dashboard | Admin | Configuration

### No Mode Defined...

I don't know what mode I am in, you probaly just need to configure me.

You will be re-directed to the configuration portal in 10 secs

In the mean time, you might want to register on the support page here: <https://www.facebook.com/groups/pistar/>

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Wait about 10 seconds for the security pop-up to appear.

# Windows Security Pop-Up:

The image shows a screenshot of the Pi-Star Digital Voice Dashboard for M1ABC. The dashboard has a red header with the text "Pi-Star Digital Voice Dashboard for M1ABC" and navigation links "Dashboard | Admin | Configuration". The main content area displays "No Mode Defined..." and a message: "I don't know what mode I am in, you probaly just need to configure me." A Windows Security pop-up window is overlaid on the dashboard. The pop-up contains the following text: "The server pi-star is asking for your user name and password. The server reports that it is from Restricted." and "Warning: Your user name and password will be sent using basic authentication on a connection that isn't secure." Below the text are input fields for "User name" and "Password", and a checkbox for "Remember my credentials". At the bottom of the pop-up are "OK" and "Cancel" buttons. A yellow callout box with a blue border contains the following instructions: "1. Enter the following: User name: 'pi-star' Password: 'raspberry'" and "2. Click 'OK'". Red arrows point from the callout box to the "User name" and "Password" input fields, and to the "OK" button.

Hostname: pi-star Pi-Star:3.4.11 / Dashboard: 20180305

## Pi-Star Digital Voice Dashboard for M1ABC

Dashboard | Admin | Configuration


### No Mode Defined...

I don't know what mode I am in, you probaly just need to configure me.

Windows Security

The server pi-star is asking for your user name and password. The server reports that it is from Restricted.

Warning: Your user name and password will be sent using basic authentication on a connection that isn't secure.

  
  
 Remember my credentials

1. Enter the following:  
User name: "pi-star"  
Password: "raspberry"

2. Click "OK"



# Pi-Star Configuration Screen:

**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	4.9.35+	Pi Zero W Rev 1.1 (512MB)	0.02 / 0.13 / 0.1	35.0°C / 95.0°F

**Control Software**

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

**General Configuration**

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	M1ABC
Radio Frequency:	431.075.000 MHz
Latitude:	50.000 degrees (positive value for North, negative for South)
Longitude:	0.000 degrees (positive value for East, negative for West)
Town:	A Town, L0C4T0R
Country:	Country, UK
URL:	http://www.qrz.com/db/M1ABC <input checked="" type="radio"/> Auto <input type="radio"/> Manual
Radio/Modem Type:	<input type="radio"/> Private <input type="radio"/> Public
Mode Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
System Time Zone:	Europe/London
Dashboard Language:	english_uk

**D-Star Configuration**

Setting	Value
RPT1 Callsign:	M1ABC <input type="checkbox"/>
RPT2 Callsign:	M1ABC <input type="checkbox"/>
Remote Password:	*****
Default Reflector:	REF001 <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="radio"/> Startup <input type="radio"/> Manual
APRS Host:	england.aprs2.net
ircDDB Gateway Language:	English (UK)
Time Announcements:	<input checked="" type="checkbox"/>
Use DPlus For XRP:	<input type="checkbox"/> Note: Update Required if changed

**Firewall Configuration**

Setting	Value
Dashboard Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
ircDDB Gateway Remote:	<input checked="" type="radio"/> Private <input type="radio"/> Public
SSH Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
Auto AP:	<input checked="" type="radio"/> On <input type="radio"/> Off Note: Reboot Required if changed

**Wireless Configuration**

Refresh | Reset WiFi Adapter | Configure WiFi

Wireless Information and Statistics	
Interface Information	Wireless Information
Interface Name: wlan0 Interface Status: Interface is up IP Address: 192.168.1.134 Subnet Mask: 255.255.255.0 Mac Address: b8:27:eb:55:8a:e0	Connected To: dkhull AP Mac Address: e8:f8:b3:d8:a5:07 Bitrate: 65.0 MB/s Signal Level: -29 dBm
Interface Statistics	Transmit Power: 31 dBm Link Quality: 70/70
Received Packets: 1041 Received Bytes: 204801 (200.0 KIB) Transferred Packets: 816 Transferred Bytes: 213014 (208.0 KIB)	

Information provided by ifconfig and iwconfig

**Remote Access Password**

User Name	Password
pi-star	password: Confirm Password: Set Password

WARNING: This changes the password for this admin page AND the "pi-star" SSH account

Pi-Star web tools. © Andy Taylor (M0WPM) 2014-2018.  
Need Help? Click Here for the Support Group  
Get your copy of Pi-Star from here.

This will bring you the “Pi-Star Configuration Screen” to the right. The default setup is probably going to show DSTAR.

In the “General Configuration” block, select “ZUMspot – Raspberry Pi Hat (GPIO)” as the Radio/Modem Type and click “Apply Changes”

**General Configuration**

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	M1ABC
Radio Frequency:	431.075.000 MHz
Latitude:	50.000 degrees (positive value for North, negative for South)
Longitude:	0.000 degrees (positive value for East, negative for West)
Town:	A Town, L0C4T0R
Country:	Country, UK
URL:	http://www.qrz.com/db/M1ABC <input checked="" type="radio"/> Auto <input type="radio"/> Manual
Radio/Modem Type:	ZUMSpot - Raspberry Pi Hat (GPIO)
Mode Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
System Time Zone:	Europe/London
Dashboard Language:	english_uk

Apply Changes

# Pi-Star Apply Changes Notice

After clicking “Apply Changes”, please wait for Pi-Star to go through it’s update and re-set process. This screen comes up 20 seconds or so after applying new changes followed shortly by the return of the configuration screen with the new changes applied. You will do this several times during this setup and will need to wait out this cycle each time.

Pi-Star:3.4.11 / Dashboard: 20180310

## 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	4.9.35+	Pi Zero W Rev 1.1 (512MB)	0.77 / 0.53 / 0.24	31.5°C / 88.7°F

**Working...**  
Stopping services and applying your configuration changes...

**Done...**  
Changes applied, starting services...

Pi-Star web config, © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Modem Warning Pop-Up:

Pi-Star 3.4.9 / Dashboard: 20180127

**Pi-Star Digital Voice - Configuration**

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

Gateway Hardware Information				
Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	4.9.35+	Pi Zero W Rev 1.1 (512MB)	1.62 / 0.54 / 0.24	35.57C / 101.37F

Message from webpage

WARNING:  
The Modem selection section has been updated,  
Please re-select your modem from the list.

OK

Once this first reset cycle completes, you will probably be greeted with a message asking you to re-select your modem from the drop-down list. If so, select “ZUMspot – Raspberry Pi Hat (GPIO)” again.

Message from webpage

WARNING:  
The Modem selection section has been updated,  
Please re-select your modem from the list.

OK

**General Configuration**

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	M1ABC
Radio Frequency:	431.075.000 MHz
Latitude:	50.000 degrees (positive value for North, negative for South)
Longitude:	0.000 degrees (positive value for East, negative for West)
Town:	A Town, L0C4T0R
Country:	Country, UK
URL:	http://www.qrz.com/db/M1ABC <input checked="" type="radio"/> Auto <input type="radio"/> Manual
Radio/Modem Type:	ZumSpot - Raspberry Pi Hat (GPIO)
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
System Time Zone:	Europe/London
Dashboard Language:	english_uk

Apply Changes

After re-entering the Modem Type, click “Apply Changes” once again and let it reset.

# Pi-Star Configuration Screen:

**Pi-Star Digital Voice - Configuration**

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

---

**Gateway Hardware Information**

Hardware	Serial	Capabilities	CPU Load	DSP Temp
pi-star	4.0.35+	#1 core = 100% / 1.11s (100%)	0.33 / 0.33 / 0.33	34.15 / 100.37

---

**Control Software**

Controller Software:  dStarManager  MMDVMHost (mmdvm-host requires 3.07 required)

Controller Mode:  Single mode  Multiple instances (or half-Program on hotspot)

---

**MMDVMHost Configuration**

Setting	Value
DMR Mode:	<input checked="" type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input checked="" type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input checked="" 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
MMDVM Display Type:	OLED Port: /dev/ttyAMA0 Nextion Layout: G4KLX

---

**General Configuration**

Hostname: pi-star (do not add suffixes such as .local)

Node Callign: M1ABC

Node Type ID: 01234567

Public Frequency: 431.071.000 Yes

Latitude: 50.000 degrees (positive value for north, negative for south)

Longitude: 0.000 degrees (positive value for east, negative for west)

Timezone: A Town, LOCATOR

Country: Country, UK

Site: http://www.orz.com/01234567 @ Alice @ M1ABC

Radio/Node Type:  BaseStation  M1ABC

Node Type:  BaseStation  Public

System Time Zone: Europe/London

Dashboard Language: english\_gb

---

**DMR Configuration**

DMR Number: DMRGateway

DMR Colour Code: 1

DMR EmbeddedOnly:

DMR DumpData:

---

**D-Star Configuration**

DPT Callign: dStar B

DPT Callign: dStar B

Default Station: REPT01   @ Startup @ Manual

APRS Issu: english.aprs2.net

Int00Gateway Language: english\_UK

Time Minimum: 1

Use Issue For SSR:  Note: update required if changed

---

**Firewall Configuration**

Dashboard Access:  Private  Public

Int00Gateway Access:  Private  Public

Site Access:  Private  Public

Auto AP:  On  Off Note: reboot required if changed

---

**Wireless Configuration**

**Wireless Information and Statistics**

Interface Information	Wireless Information
Interface Name: wlan0	Connected to: dStar
Interface Status: (interface is up)	AP Mac Address: 48:9E:B3:0B:43:07
IP Address: 192.168.1.134	Driver: RTL8812BU
Signal Level: -28.525 dB	Signal Level: -28.525 dBm
Mac Address: 08:00:27:00:00:00	Transmit Power: 33 dBm
	Link Quality: 70/70

Received Packets: 3051  
Received Bytes: 66372 (648.0 KiB)  
Transferred Packets: 2770  
Transferred Bytes: 93080 (908.8 KiB)

Information provided by ifconfig and iwconfig

---

**Remote Access Password**

pi-star Password:  Confirm Password:  Set Password

WARNING: this changes the password for this web page and the "pi-star" ssh account.

The new configuration screen will look like this: There will be a new block now that represents the “ZUMspot – Raspberry Pi Hat (GPIO)” that is Parked atop your Raspberry Pi Zero/W.

**MMDVMHost Configuration**

Setting	Value
DMR Mode:	<input checked="" type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input checked="" type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input checked="" 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
MMDVM Display Type:	OLED Port: /dev/ttyAMA0 Nextion Layout: G4KLX

Here is where you will tell your ZUMspot/Pi-Star what you want it to do for you. Most can leave it as is since DMR and DSTAR is what many will want. If you want YSF (Fusion), APCO P25 and/or YSF2DMR, turn these on. A new configuration block for each will appear (once you click “Apply Changes”) and the system does it’s reset.

# Pi-Star Control SW Setup:

**Pi-Star Digital Voice - Configuration**

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

**Gateway Hardware Information**

Hardware	Model	Part Number	CPU Load	DVR Temp
pi-star	4.0.35+	#1 8885 v rev 1.1 (31mm)	0.33 / 0.33 / 0.33	34.1°C / 100.3°F

**Control Software**

Controller Software:  DStarRepeater  MMDVMHost (DV-Mega Minimum Firmware 3.07 Required)

Controller Mode:  Simplex Node  Duplex Repeater (or Half-Duplex on Hotspots)

**Apply Changes**

**MMDVMHost Configuration**

Mode:  Simplex  Duplex  Half-Duplex

**General Configuration**

Hostname: pi-star  
 Mode Callsign: M1ABC  
 Country: UK  
 System Time Zone: Europe/London  
 Dashboard Language: english\_gb

**D-Star Configuration**

RPX Callsign: s1abc  
 RPX Mode: D  
 Default Station: REPT01  
 APX Mode: english.sps2.net

**Firewall Configuration**

Dashboard Access:  private  public  
 WebAccess:  private  public  
 Auto AS:  on  off

**Wireless Configuration**

**Interface Information and Statistics**

Interface Name	IP Address	Subnet	MAC Address	Mode	Power	Link Quality
wlan0	192.168.1.134	192.168.1.0/24	b8:27:45:55:8e:a0	72.1 MHz	31 dBm	70/70

**Remote Access Password**

pi-star password: Confirm password: Set Password

WARNING: this changes the password for this admin page and the "pi-star" ssh account.

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)

**Apply Changes**

Make sure your "Control Software" Section is set up as Shown above. The default should be good. If you change something, remember to click "Apply Changes" and wait for the reset cycle to complete and the new changes to appear.









# Pi-Star DSTAR Config. Setup:

Set up the DSTAR specifics here. Enter your RPT1 module letter (“B” in most cases). RPT2 will be generated for you. **DO NOT change the Remote Password.** Set a default reflector (this is where your DSTAR configuration will land on startup). Pick an APRS Host and language. Turn on Time Announcements (optional). Leave “Use DPlus for XRF” off for now (there is info later on what to do with this switch). Click “Apply Changes” when done.

The screenshot shows the Pi-Star Digital Voice Configuration web interface. The 'D-Star Configuration' section is highlighted with a red arrow pointing to the RPT1 Callsign field. The configuration includes fields for RPT1 Callsign (KC6N B), RPT2 Callsign (KC6N G), Remote Password (masked), Default Reflector (REF012 A), APRS Host (social.aprs2.net), ircDDBGateway Language (English\_US), Time Announcements (checked), and Use DPlus for XRF (unchecked). The 'Apply Changes' button is visible at the bottom of the section.

D-Star Configuration	
Setting	Value
RPT1 Callsign:	KC6N B
RPT2 Callsign:	KC6N G
Remote Password:	••••••••
Default Reflector:	REF012 A <input checked="" type="radio"/> Startup <input type="radio"/> Manual
APRS Host:	social.aprs2.net
ircDDBGateway Language:	English_(US)
Time Announcements:	<input checked="" type="checkbox"/>
Use DPlus for XRF:	<input type="checkbox"/>
Note: Update Required if changed	
<input type="button" value="Apply Changes"/>	

# Pi-Star Firewall Config. Setup:

**Pi-Star Digital Voice - Configuration**

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

Gateway Hardware Information

Hardware: pi-star | Version: 4.0.35+ | #1 user: m: mvr 2.1 (11m) | CPU Load: 0.43 / 0.52 / 0.13 | CPU Temp: 34.1°C / 103.3°F

Control Software

Controller Software:  OpenSIPS  Asterisk (minimum version 1.0.7 required)

Controller Mode:  Single mode  Multiple repeaters (or half-bridges on hotspot)

MMDVMHost Configuration

Mode:  DMR  D-Star  Fusion  P25

Mode Type:  Private  Public

General Configuration

Hostname: pi-star | Mode:  Private  Public

Public Frequency: 431.075000 MHz

Latitude: 50.000 | Longitude: 0.000

Country: UK

Mode Type:  Private  Public

Dashboard Language: english\_gb

DMR Configuration

DMR Master: DMRRemote

DMR Colour Code: 1

DMR EmbeddedOnly:

D-Star Configuration

D-Star Mode:  DMR  D-Star

AP Mode:  On  Off

Firewall Configuration

Dashboard Access:  Private  Public

ircDDGGateway Remote:  Private  Public

SSH Access:  Private  Public

Auto AP:  On  Off

Wireless Configuration

Interface Name: wlan0

Interface Status: Connected to wlan0

IP Address: 192.168.1.134

Subnet Mask: 255.255.255.0

Mac Address: b8:27:45:55:5e:a0

Received Packets: 3081

Received Bytes: 66372 (648.0 KiB)

Transferred Packets: 1770

Transferred Bytes: 930687 (908.8 KiB)

Remote Access Password

pi-star | Password: | Confirm Password: | Set Password

These settings determine who can see your ZUMspot. I set all of these to private. If this pi-star were running on an MMDVM Configuration driving a multi-mode repeater you might want to make some of these public. But for a private node, I'd keep them private.

AutoAP: When set to "On" (default) the ZUMspot will automatically revert to "access point" mode if it finds no accessible WiFi networks. This allows direct programming of the ZUMspot WiFi as described in Appendix G.

↓

**Firewall Configuration**

Setting	Value
Dashboard Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
ircDDGGateway Remote:	<input checked="" type="radio"/> Private <input type="radio"/> Public
SSH Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
Auto AP:	<input checked="" type="radio"/> On <input type="radio"/> Off
Note: Reboot Required if changed	

Apply Changes

# Pi-Star Wireless Setup:

**Pi-Star Digital Voice - Configuration**

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

**Gateway Hardware Information**

Hardware	Model	Serial	OS	OS Load	OS Temp
pi-star	4.0.35+	#1 8880 H ver 3.1 (3186)	0.33 / 0.33 / 0.33	38.1% / 100.0%	

**Control Software**

Controller Software:  dStarManager  dStarManager (requires version 3.07 required)

Controller Mode:  Single mode  Multiple mode (or Half-Program on hotspot)

**MMDV/Hot Configuration**

Setting	Value
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>
Hot Mode:	<input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/> or <input type="checkbox"/>

**General Configuration**

Hostname: pi-star (do not add suffixes such as .local)

Mode Challenge: M ABC

Loc: Time ID: 034800

Public Frequency: 431.071.000 MHz

Latitude: 50.000 degrees (positive value for north, negative for south)

Longitude: 0.000 degrees (positive value for east, negative for west)

Loc: A Town, LOCATOR

Country: UK

Loc: http://www.ort.com/MI/MABC

Radio/Mode Type:  AUSE  MACTAL

Mode Type:  private  public

System Time Zone: Europe/London

Dashboard Language: english\_uk

**DMR Configuration**

DMR Number: DMR/Default

DMR Colour Code: 1

DMR EmbeddedOnly:

DMR DumpData:

**D-Star Configuration**

DPT Challenge: dStar [B]

DPT Challenge: dStar [B]

Secure Password: \*\*\*\*\*

Default RadioFactor: REPT01 [C]

APSA Root: england.sps2.net

RadioGateway Language: english\_uk

Time Minimum: 1

See Issue for SSR:  Note: update required if changed

**Firewall Configuration**

Dashboard Access:  private  public

RadioGateway Access:  private  public

DMR Access:  private  public

Auto AP:  on  off Note: reboot required if changed

**Wireless Configuration**

Refresh Reset WiFi Adapter Configure WiFi

**Wireless Information and Statistics**

Interface Information	Wireless Information
Interface Name : wlan0	Connected To : dkhull
Interface Status : Interface is up	AP Mac Address : 48:F8:B3:D8:A5:07
IP Address : 192.168.1.134	Bitrate : 65 Mb/s
Subnet Mask : 255.255.255.0	Transmit Power : 31 dBm
Mac Address : b8:27:eb:55:8a:e0	Link Quality : 70/70
Received Packets : 75681	Signal Level : -33 dBm
Received Bytes : 7226054 (6.8 MiB)	
Transferred Packets : 19430	
Transferred Bytes : 6062376 (5.7 MiB)	

Information provided by ifconfig and iwconfig

**Remote Access Password**

pi-star password: Confirm password: Set Password

WARNING: this changes the password for this whole page and the "pi-star" SSH account!

pi-star can only be used by root@pi-star:2014-2018  
See your copy of Pi-Star Firmware

This area shows you what your WiFi is doing. You will have already configured this with the "wpa\_supplicant" Step executed earlier. However, at this point you can click "Configure WiFi" to add more SSID/PSK pairs to Allow your ZUM/Pi to automatically find alternate WiFi Access if available. You can set up for your home, your Phone, your wife's phone, etc. it will hunt for what's available.

**Wireless Configuration**

Refresh Reset WiFi Adapter Configure WiFi

**Wireless Information and Statistics**

Interface Information	Wireless Information
Interface Name : wlan0	Connected To : dkhull
Interface Status : Interface is up	AP Mac Address : 48:F8:B3:D8:A5:07
IP Address : 192.168.1.134	Bitrate : 65 Mb/s
Subnet Mask : 255.255.255.0	Transmit Power : 31 dBm
Mac Address : b8:27:eb:55:8a:e0	Link Quality : 70/70
Received Packets : 75681	Signal Level : -33 dBm
Received Bytes : 7226054 (6.8 MiB)	
Transferred Packets : 19430	
Transferred Bytes : 6062376 (5.7 MiB)	

Information provided by ifconfig and iwconfig

# Pi-Star adding additional WiFi:

Click “Configure WiFi” then Click “Add Network” to open up the add network dialog. Add the additional SSID and PSK for the new network. Repeat as needed.

The screenshot shows the Pi-Star Digital Voice Configuration interface. The 'Configure WiFi' button is highlighted with a red arrow. The interface includes sections for Gateway Hardware Information, Control Software, MMDVMHost Configuration, General Configuration, DMR Configuration, D-Star Configuration, Firewall Configuration, and Wireless Configuration. The Wireless Configuration section is expanded, showing interface information for wlan0 and wlan1.

This screenshot shows the 'Wireless Configuration' dialog for Network 0. It includes a 'Delete' button, input fields for SSID (dkhull) and PSK (represented by dots), and buttons for 'Scan for Networks (10 secs)', 'Add Network', and 'Save (and connect)'. A red arrow points from the 'Add Network' button in the previous screenshot to this dialog.

This screenshot shows the 'Wireless Configuration' dialog for Network 1. It includes a 'Delete' button, input fields for SSID and PSK, and buttons for 'Scan for Networks (10 secs)', 'Add Network', and 'Save (and connect)'. A red arrow points from the 'Add Network' button in the previous screenshot to this dialog.

Click “Save and Connect” when done.

# Pi-Star Password Setup:

**Pi-Star Digital Voice - Configuration**

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

**Gateway Hardware Information**

Hardware	Serial	MAC Address	Chip Load	Chip Temp
pi-star	4-0-35*	#1 88E6 1187 3138	0.53 / 0.53 / 0.53	38.15 / 100.31

**Control Software**

Controller Software:  OpenSIPS  Asterisk (minimum version 1.0.7 required)

Controller Mode:  Single mode  Multiple (requires SIP Proxy on separate)

**MMO/Voice Configuration**

Device	SR	SR Range	SR Range
DBX Mode	<input checked="" type="checkbox"/>	00	00
DBX2 Mode	<input checked="" type="checkbox"/>	00	00
DBX3 Mode	<input checked="" type="checkbox"/>	00	00
DBX4 Mode	<input checked="" type="checkbox"/>	00	00
DBX5 Mode	<input checked="" type="checkbox"/>	00	00
DBX6 Mode	<input checked="" type="checkbox"/>	00	00

**General Configuration**

Hostname: pi-star do not add suffixes such as .local

Mode Dialing: SIP ABC

Country: GB

Public Frequency: 431.071.000

Latitude: 50.000 degrees, positive value for north, negative for south

Longitude: 0.000 degrees, positive value for east, negative for west

Timezone: A Town, LOCATOR

Country: UK

SSC: http://www.oz.com.au/MASC @ Assoc / NATAL

Radio/Mode Type:  Private  Public

System Time Zone: Europe/London

Dashboard Language: English\_GB

**D-Star Configuration**

SPT Dialing: eSAB

SPT Call Sign: 1234567

Default Repeater: REPT01   @ Startup / Default

APRS Inet: english.sps2.net

Time Announcement:   note: update required if changed

**Firewall Configuration**

Dashboard Access:  Private  Public

SSH Access:  Private  Public

Auto AS:  On  Off note: reboot required if changed

**Wireless Configuration**

**Wireless Information and Statistics**

Interface Information	Connected To
Interface Name: wlan0	connected to: wlan0
Interface Status: wlan0 is up	AP Mac Address: 48:9E:B3:0B:A3:07
IP Address: 192.168.1.134	SSID: Pi-Star-MAC
Signal Level: -28 dBm	Signal Level: -28 dBm
Received Packets: 3081	Transmit Power: 31 dBm
Received Bytes: 66372 (648.0 KiB)	Link Quality: 70/70
Transferred Packets: 1770	
Transferred Bytes: 930687 (908.8 KiB)	

**Remote Access Password**

User Name	Password
pi-star	Password: <input type="password"/> Confirm Password: <input type="password"/> <input type="button" value="Set Password"/>

**WARNING: This changes the password for this admin page AND the "pi-star" SSH account**

This dialog allows you to personalize your Pi-Star Credentials by changing the password. Initially your Credentials are:

User Name: "pi-star"  
Password: "raspberrry"

Here you can customize your password

**Remote Access Password**

User Name	Password
pi-star	Password: <input type="password"/> Confirm Password: <input type="password"/> <input type="button" value="Set Password"/>

**WARNING: This changes the password for this admin page AND the "pi-star" SSH account**

Your User name is set at the top of the General Configuration block.

Change Password here if you want something different.

# Pi-Star Backup/Restore:

Now that you have everything set up, it would be a good idea to back up your configuration.

Selecting “Backup/Restore” at the top of the configuration page will bring up the dialog shown on the right.

Select “Download Configuration” which will create a “zip” file containing all the information you just so painstakingly entered. Save this file somewhere you will remember (you can rename it if you like).

Later you can restore the configuration by referencing the file in the RH plane and clicking the green up arrow.

Pi-Star Digital Voice - Backup/Restore

Dashboard | Admin | Power | Update | Configuration

Backup/Restore

Download Configuration

Restore Configuration

WARNING:  
Editing the files outside of Pi-Star \*could\* have un-desireable side effects.  
This backup and restore tool, will backup your config files to a Zip file, and allow you to restore them later either to this Pi-Star or another one.  
System Passwords / Dashboard passwords are NOT backed up / restored.  
Wireless Configuration IS backed up and restored

Pi-Star web config. © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Note: if you have a previous back-up “zip” file stored, you can skip everything in this section and just copy that “zip” file to the boot sector of a newly imaged card in place of the WPA\_suplicant.conf file.

# Pi-Star Dashboard:

At this point you are done. Click “Dashboard” at the top of the page to switch to see your customized landing page.

This is the page that will come up when you call up <http://pi-star> or <http://pi-star.local> from your browser.

Your “Gateway Activity” and “Local RF Activity” lists may be empty at first, but will fill out as time progresses.

There is no “Log-In” needed for this page.

Pi-Star:3.4.11 / Dashboard: 20180310

## Pi-Star Digital Voice Dashboard for KC6N

Dashboard | Admin | Configuration

Modes Enabled	
D-Star	DMR
YSF	P25
YSF2DMR	NXDN

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR Net	NXDN Net
Internet	

Radio Info	
Trx	Listening YSF
Tx	439.025000 MHz
Rx	439.025000 MHz
FW	ZUMspot:v1.3.3

D-Star Repeater	
RPT1	KC6N B
RPT2	KC6N G

D-Star Network	
APRS	social.aprs2.net
IRC	rr.openquad.net
Linked to REF012 A (DPlus Outgoing)	

DMR Repeater	
DMR ID	3106564
DMR CC	1
TS1	disabled
TS2	enabled
TG 31066/not linked	

DMR Master	
EM United States	3103

YSF Network	
Room:	Alabama-Link

Gateway Activity									
Time (PDT)	Mode	Callsign	Target	Src	Dur (s)	Loss	BER		
14:47:03 Mar 16th	YSF	WJ4P	ALL at KE4LTI	Net	0.8	0%	0.0%		
14:46:42 Mar 16th	YSF	AA0KM	ALL at AA0KM	Net	0.1	0%	0.0%		
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0%	0.4%		
14:46:05 Mar 16th	D-Star	KC6N/IDS1	CQCCQC	RF	2.1	0%	0.0%		
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0%	0.2%		
14:44:41 Mar 16th	DMR Slot 2	AF6BY	TG 31066	Net	1.2	0%	0.0%		
14:41:36 Mar 16th	DMR Slot 2	VA3RLP	TG 31066	Net	0.8	0%	0.0%		
14:39:57 Mar 16th	DMR Slot 2	K7FAY	TG 31066	Net	4.4	0%	0.0%		
14:39:13 Mar 16th	D-Star	KC6N/INFO	CQCCQC	Net	6.5	0%	0.0%		
14:36:15 Mar 16th	D-Star	MLABC/INFO	CQCCQC	Net	2.5	0%	0.0%		

Local RF Activity									
Time (PDT)	Mode	Callsign	Target	Src	Dur (s)	BER	RSBI		
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0.4%	S9+46dB		
14:46:05 Mar 16th	D-Star	KC6N/IDS1	CQCCQC	RF	2.1	0.0%	S9+46dB		
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0.2%	S9+46dB		

Pi-Star / Pi-Star Dashboard. © Andy Taylor (MW0MHZ) 2014-2018.  
 irc0DBGateway Dashboard by Hans-J. Barthien (DL501).  
 MMDVMDash developed by Kim Huebel (DG9VH).  
 Need help? Click here for the Support Group  
 Get your copy of Pi-Star from here.

# Pi-Star Admin Dashboard:

Click "Admin" at the top of the page to switch to see your "Admin" page. You will need to provide your credentials to get here:

UN: pi-star  
PW: raspberry

Assuming you haven't changed from the defaults.

There are various other options:

- Live Logs:** allows you to start a log
- Power** let's you power down and reset
- Update:** initiates a SW refresh
- Configuration:** we already looked at

Hostname: pi-star
Pi-Star: 3.4.11 / Dashboard: 20180310

## Pi-Star Digital Voice Dashboard for KC6N

Dashboard | Admin | Live Logs | Power | Update | Configuration

---

### Gateway Hardware Information

Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	4.9.35+	Pi Zero W Rev 1.1 (512MB)	4.91 / 2.78 / 1.41	46.5°C / 115.7°F

### Service Status

MMDVMHost	DMRGateway	YSFGateway	YSFParrot	P25Gateway	P25Parrot
DStarRepeater	ircDDBGateway	TimeServer	PiStar-Watchdog	PiStar-Remote	PiStar-Keeper

### D-Star Link Information

Radio	Default	Auto	Timer	Link	Linked to	Mode	Direction	Last Change (UTC)
KC6N B	REF012 A	Auto	Never	Up	REF012 A	DPlus	Outgoing	21:39:09 Mar 16th

### D-Star Link Manager

Radio Module	Reflector	Link / Un-Link	Action
KC6N B	REF012	A	<input checked="" type="radio"/> Link <input type="radio"/> UnLink <input type="button" value="Request Change"/>

### Active BrandMeister Connections

BrandMeister Master	Default Ref	Timeout(s)	Active Ref	Static TGs	Dynamic TGs
BM United States 3103	REF0	0(s)	None	TG3106	TG31066

### Gateway Activity

Time (PDT)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER
14:47:33 Mar 16th	D-Star	KI6KTG/D74A	CQCCQC	Net	1.9	0%	0.0%
14:47:03 Mar 16th	YSF	WJ4P	ALL at KE4LTT	Net	0.8	0%	0.0%
14:46:42 Mar 16th	YSF	AAOKM	ALL at AAOKM	Net	0.1	0%	0.0%
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0%	0.4%
14:46:05 Mar 16th	D-Star	KC6N/ID51	CQCCQC	RF	2.1	0%	0.0%
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0%	0.2%
14:44:41 Mar 16th	DMR Slot 2	AF6BY	TG 31066	Net	1.2	0%	0.0%
14:41:36 Mar 16th	DMR Slot 2	VA3RLP	TG 31066	Net	0.8	0%	0.0%
14:39:57 Mar 16th	DMR Slot 2	K7FAY	TG 31066	Net	4.4	0%	0.0%
14:39:13 Mar 16th	D-Star	KC6N/INFO	CQCCQC	Net	6.5	0%	0.0%
14:36:15 Mar 16th	D-Star	M1ABC/INFO	CQCCQC	Net	2.5	0%	0.0%

### Local RF Activity

Time (PDT)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0.4%	S9+46dB
14:46:05 Mar 16th	D-Star	KC6N/ID51	CQCCQC	RF	2.1	0.0%	S9+46dB
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0.2%	S9+46dB

### Modes Enabled

D-Star	DMR
YSF	P25
YSF2DMR	NXDN

### Network Status

D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR Net	NXDN Net
Internet	

### Radio Info

Trx	Listening
Tx	439.025000 MHz
Rx	439.025000 MHz
PW	ZUMspot:v1.3.3

### D-Star Repeater

RPPT1	KC6N B
RPPT2	KC6N G

### D-Star Network

APRS	socal aprs2.net
IRC	rr.openquad.net
Linked to REF012 A (DPlus Outgoing)	

### DMR Repeater

DMR ID	3106564
DMR CC	1
TS1	disabled
TS2	enabled
TG 31066/not linked	

### DMR Master

BM United States	3103
------------------	------

### YSF Network

Room:	Alabama-Link
-------	--------------

Pi-Star / Pi-Star Dashboard, © Andy Taylor (M0QMWZ) 2014-2018.  
 ircDDBGateway Dashboard by Hans-J. Eberber (D5J01).  
 MMDVMDash developed by Kim Huebel (DG9VH).  
 Need help? Click here for the Support Group.  
 Get your copy of Pi-Star from here.



# ZUMspot/PiStar

Part IV

Setting up your radios

# DSTAR (ID-51 example):

For DSTAR, you need to create a channel in the form of a DV Repeater with the receive frequency being your ZUMspot frequency (439.025 MHz in this case), set -DUP (or +DUP will work as well) and an Offset Frequency of "0.00" as shown below. Add your RPT1 callsign (KC6N^^B in my case) and your RPT2 callsign (KC6N^^G in my case). You should also fill out the remainder of the channel information including the geographic coordinates which will allow your hot spot to show up in your Near Repeater search.

20: Hot Spots (Remain 7 memories)													
No.	Type	Name	Sub Name	Call Sign		Frequency				Tone		USE (FROM)	Posit
				Repeater Call Sign	Gateway Call Sign	Operating Freq	DUP	Offset Freq	Mode	Tone	Repeater Tone		
0	DV Repeater	ZumSpt 439.025		KC6N B	KC6N G	439.025000	-DUP	0.000000	DV	--	--	Yes	Exact
1	DV Simplex	OpSpt 437.025		--	--	437.025000	--	--	DV	--	--	Yes	None
2	DV Simplex	DVAP 438.025		--	--	438.025000	--	--	DV	--	--	Yes	None
New													

Note that I also have an OpenSpot and a DVAP each of which can be set as a simple simplex channel as shown but **the ZUMspot/Pi-Star requires a duplex setup as shown above.** This is an Icom ID-51 Plus example.

# DMR:

- Duplicate a Zone in your radio
- For each channel in the new Zone:
  - Set TX and RX to the ZUMspot frequency
  - Set the Color Code to “1”
  - Set the Time Slot for all channels to “2”
  - Set Admit Criteria to “Always”
  - Set the Talk Group (Group Call Code) to the TGID you want.

# Yaesu System FUSION:

- Set up a channel in your radio that is simplex on the ZUMspot Frequency
- That's it.
- None of the HotSpots do Wires-X
- The latest versions (3.4.12 and later) support FCS reflectors.
- There is no hotspot access to WiresX (complain to Yaesu)

# APCO Project 25 (P25):

- I do not have a P25 radio but there is information herein on how to access this mode via cross-mode from a Yaesu System Fusion radio like an FT2DR.
- If cross mode, make sure your Fusion radio is set to VW mode so that it's Vocoder is running at 7200 bps (for compatibility with P25 phase 1).
- People seem to be using their DMR ID for the radio ID on P25.

# NXDN:

- I do not have an NXDN radio but there is information herein on how to access this mode via cross-mode from Yaesu System Fusion and DMR radio.
- One thing you will need is an NXDN ID. Follow the instructions found here:  
<http://nxmanager.weebly.com/>
- NXDN provides a “Talker Alias” feature, it is recommended that you turn that on and add your Ham Radio Callsign.

# ZUMspot/PiStar

## Appendix A

### Communicating with your ZUMspot

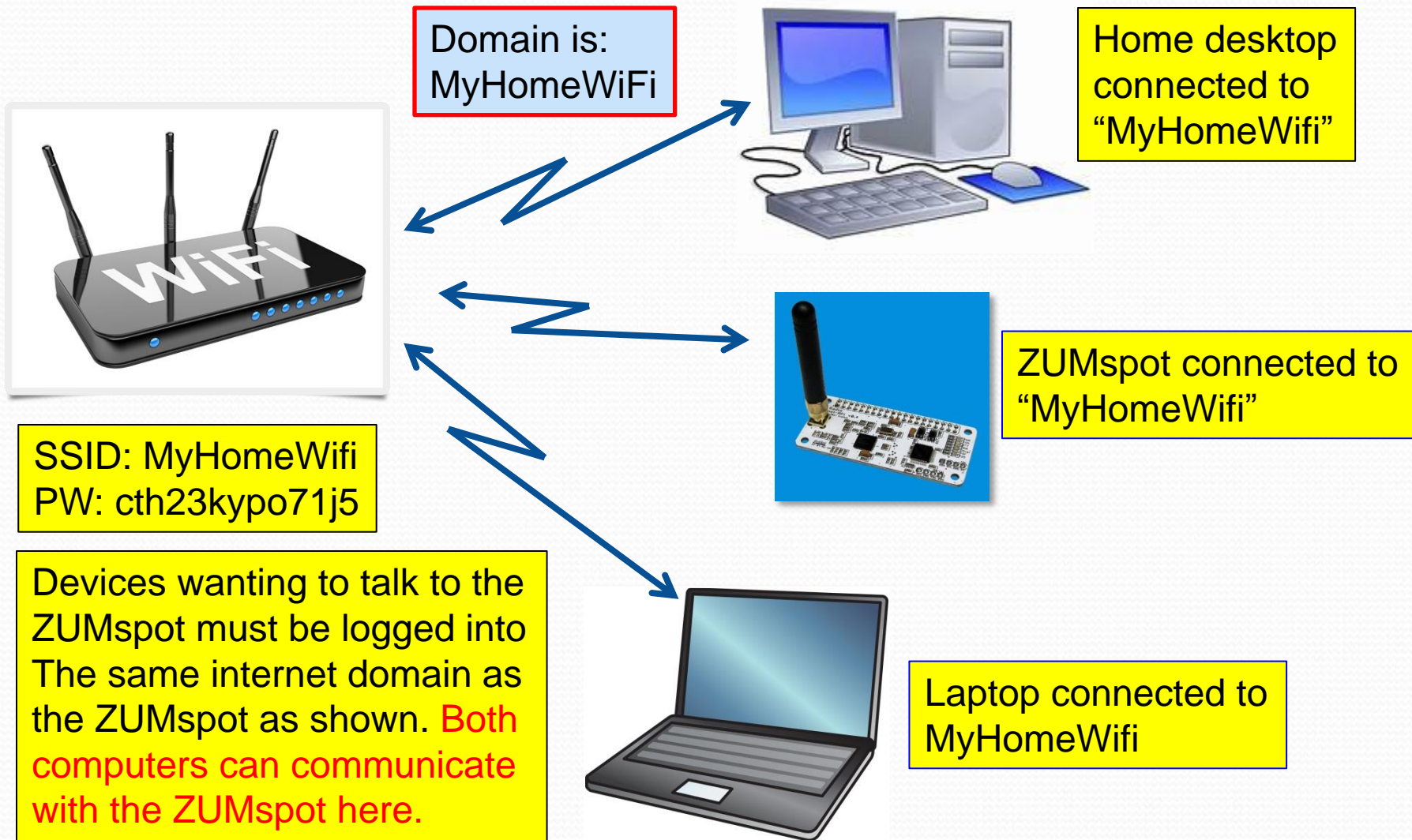
The computer that you want to use to control the ZUMspot must be joined to the same WiFi network that the ZUMspot is joined to. Be careful of firewalls, routers etc.

# Communicating with ZUMspot

- In order to log onto your ZUMspot, your computer must be operating in the same WiFi domain as your ZUMspot
- Next page shows all devices logged into “MyHomeWiFi” so all can reach ZUMspot
- The subsequent page shows two domains, MyHomeWiFi and My iPhone. ZUMspot is on My iPhone so it cannot be seen by devices operating in the MyHomeWiFi domain.



# Communicating with ZUMspot



# Communicating with ZUMspot



Domain is:  
MyHomeWiFi



Home Desktop  
connected to  
"MyHomeWiFi"  
(cannot reach  
ZUMspot)

SSID: MyHomeWifi  
PW: cth23kypo71j5



ZUMspot connected to  
"My iPhone"



SSID: My iPhone  
PW: xyzzzy3256jjy

Domain is:  
My iPhone



Laptop connected  
to My iPhone  
(can reach ZUMspot)

# ZUMspot/PiStar

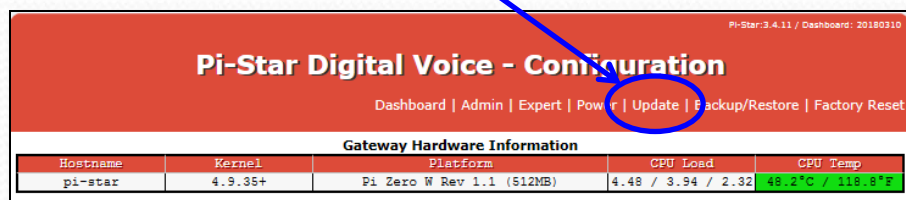
Appendix B

Setting the “Use DPlus for XRF” switch



# Pi-Star Update:

Click "Update" at the top of the configuration page:



Pi-Star: 3.4.11 / Dashboard: 20180310

## 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	4.9.35+	Pi Zero W Rev 1.1 (512MB)	4.48 / 3.94 / 2.32	46.2°C	118.8°F

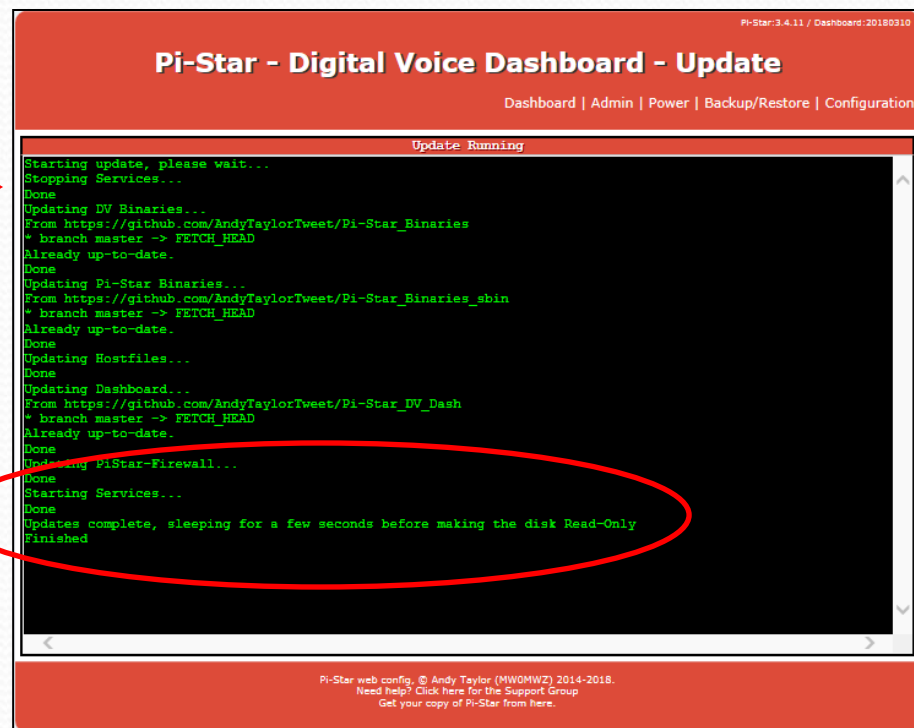
The update window will open and it will run for a while, depending on how long it has been since the image was built. Once done, you will see:

"Starting Services"

"Done"

"Update Complete, Sleeping...."

"Finished".



Pi-Star: 3.4.11 / Dashboard: 20180310

## Pi-Star - Digital Voice Dashboard - Update

Dashboard | Admin | Power | Backup/Restore | Configuration

Update Running

```
Starting update, please wait...
Stopping Services...
Done
Updating DV Binaries...
From https://github.com/AndyTaylorTweet/Pi-Star_Binaries
* branch master -> FETCH_HEAD
Already up-to-date.
Done
Updating Pi-Star Binaries...
From https://github.com/AndyTaylorTweet/Pi-Star_Binaries_sbin
* branch master -> FETCH_HEAD
Already up-to-date.
Done
Updating Hostfiles...
Done
Updating Dashboard...
From https://github.com/AndyTaylorTweet/Pi-Star_DV_Dash
* branch master -> FETCH_HEAD
Already up-to-date.
Done
Updating PiStar-Firewall...
Done
Starting Services...
Done
Updates complete, sleeping for a few seconds before making the disk Read-Only
Finished
```

Pi-Star web config. © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Restoring from a backup:

Note that “Backup” (as described earlier) does not save the setting of this switch.

D-Star Configuration	
Setting	Value
RPT1 Callsign:	KC6N B
RPT2 Callsign:	KC6N G
Remote Password:	.....
Default Reflector:	REF012 A <input checked="" type="radio"/> Startup <input type="radio"/> Manual
APRS Host:	socal.aprs2.net
ircDDBGateway Language:	English_(US)
Time Announcements:	<input checked="" type="checkbox"/>
Use DPlus for XRF:	<input checked="" type="checkbox"/> Note: Update Required if changed

Apply Changes

If you restore from a previously saved backup, you will need to reset “Use Dplus for XRF” to ON **and then do the update again.** In other words repeat the process described in this section.

This would become necessary if you were to build a fresh image on a new card (a version upgrade perhaps) and you restore your previous configuration settings from a backup. In this case the restored settings will come up with “Use Dplus for XRF” turned “OFF”. Switch it to “ON”, Apply Changes, and do the update.

# ZUMspot/PiStar

Appendix C

Setting up HotSpot support on Brandmeister

# Setting up BM HotSpot Support

- Once you have your HS running you will want to set up Brandmeister support.
- This will allow you to do the following:
  - Designate Static talk groups
  - Kill QSO's on dynamic TG's and delete these quasi-static TG's as needed
- First you need to create an account. If you have done that, skip the first slide.



# Create a Brandmeister Account

Registration

Do you already have a SelfCare account on [dstar.su?](#) [Login!](#)

### General Account Details

**Callsign**

**Email Address**

**Account type**

Personal User Account  
 Repeater Account

### Security


**Password**

**Confirm Password**

**Anti Spam**

What is the wavelength of the UHF band in centimeters?

**DMR ID**

I'm not a robot 

[Privacy](#) [Terms](#)

[Register!](#)

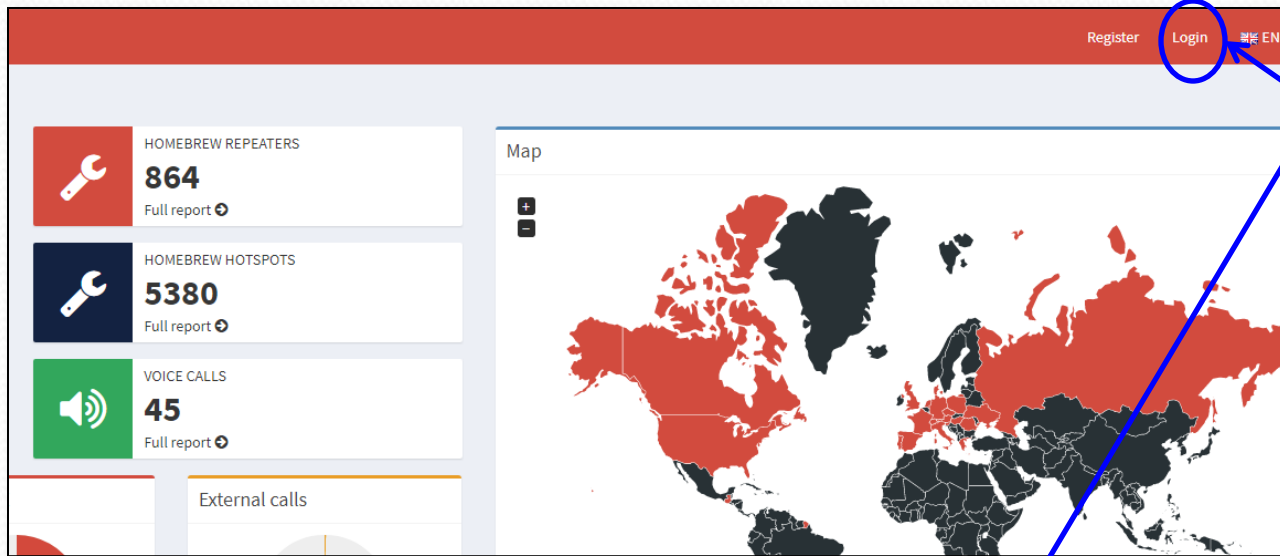
1. From the front page, Select "Register"

2. Fill out the registration form

3. Don't forget the CAPTCHA Question.

4. Select "Register"

# Log onto your BM Account



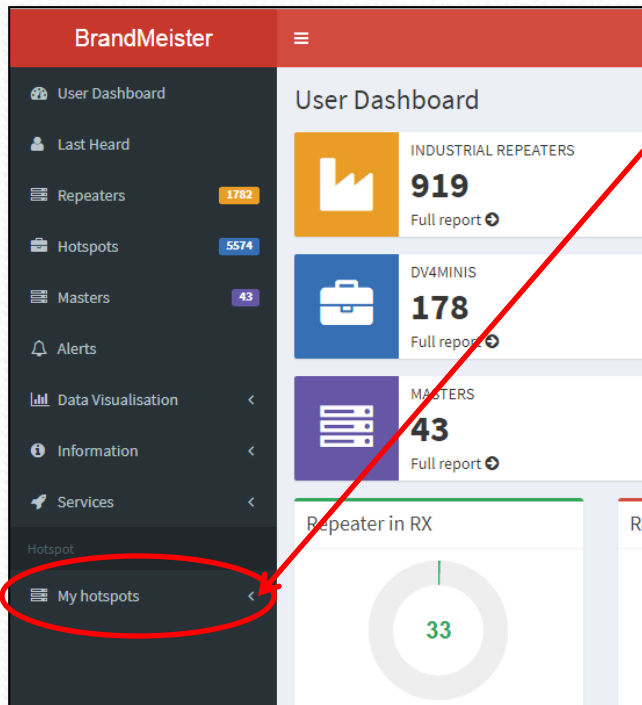
1. Click "Login" to Log onto your BM account

A screenshot of the login form titled 'Login with your SelfCare account'. It features two input fields: 'Callsign' with the value 'KC6N' and 'Password' with masked characters. Below the password field is a blue 'Login' button and a link for 'Forgot your password?'. At the bottom of the form is a red banner with the text 'Not a member? Register!'. Three yellow callout boxes with blue arrows point to the 'Callsign' field, the 'Password' field, and the 'Login' button.

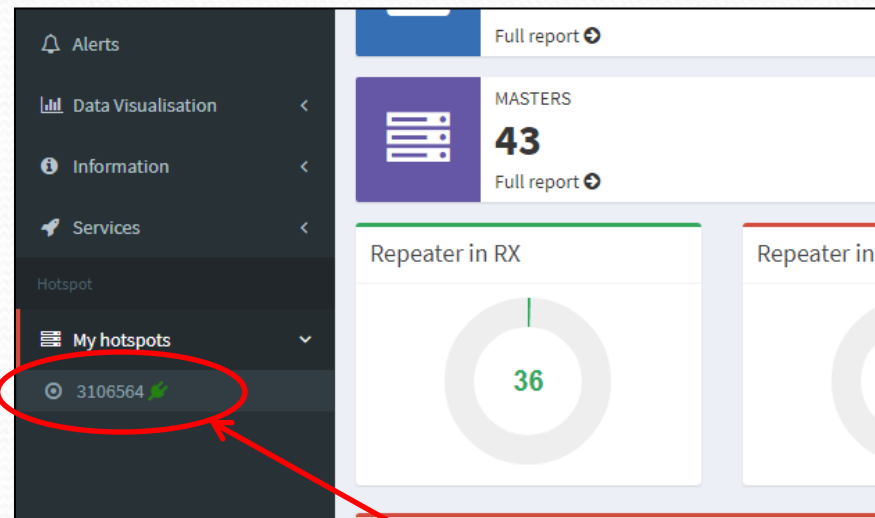
2. Enter Account Credentials

3. Click "Login"

# Find your HotSpot settings page



1. Click the Left pointing arrow next to “My Hotspots”



2. Your hotspot will show up in the “drop down”

3. Click on the number of the hotspot

# HotSpot settings page

The screenshot shows the BrandMeister interface for configuring a HotSpot. The left sidebar contains navigation options: User Dashboard, Last Heard, Repeaters (1778), Hotspots (5570), Masters (43), Alerts, Data Visualisation, Information, Services, and My hotspots (3106564). The main content area is titled 'Settings of KC6N (View)' and is divided into three sections: General Settings, Sysops, and Actions.

**General Settings**

Priority Message	Priority Message		
Description	Description		
Website	http://www.qrz.com/db/KC6N	Location (City)	San Diego, CA
Latitude	32.716991	Longitude	-117.160004
Power (EIRP)	0	Gain (dBi)	0.00
Height AGL in m	0		

Save changes

**Sysops**

Callsign	Read Settings	Write Settings	Manage Sysops
KC6N	✓	✓	✓

**Actions**

Get IP address Drop call Drop dynamic groups Reset connection

Fill out the information on the form (part of which is shown here). We'll focus on the Bottom part of the page where you will actually set up how your HS behaves on BM.

# HotSpot settings management

The screenshot shows a web interface for managing HotSpot settings. At the top, there are three tabs: 'Callsign' (with 'KCGN' below it), 'Read Settings' (with a green checkmark), and 'Write Settings' (with a green checkmark). Below the tabs is an 'Actions' section containing four red buttons: 'Get IP address', 'Drop call', 'Drop dynamic groups', and 'Reset connection'. These buttons are circled in red. Below the actions are three main sections, each also circled in red: 'Reflector Settings' with input fields for 'Active reflector' (value 4000) and 'Default reflector' (value 0); 'Static Talkgroups' with a list of 'California (3106)', 'SoCal (31066)', and 'SoCal (31066)'; and 'Scheduled static' with a '+ Add Scheduled Static' button and an 'Active Timed Statics' list area with a 'Remove' button at the bottom.

Here you can add and drop active Calls drop dynamic talk groups etc.

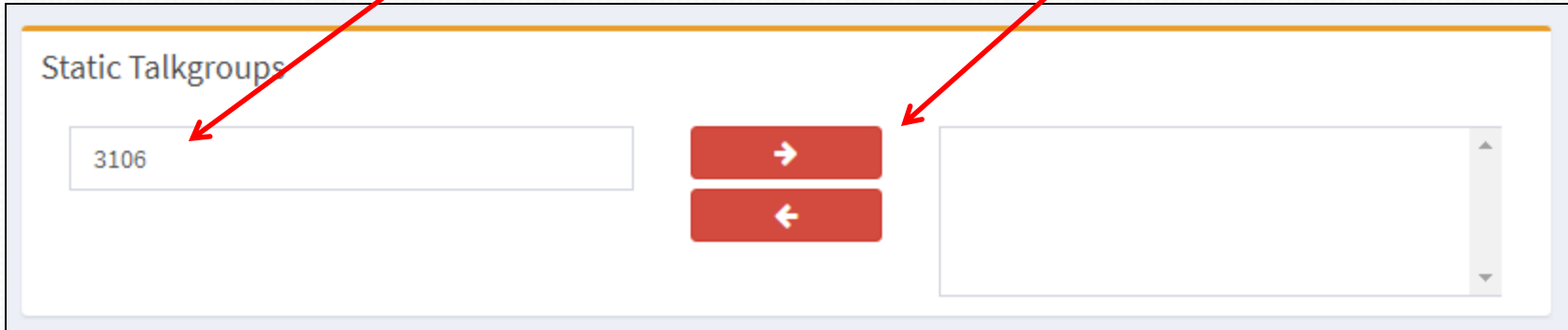
Here is where you can set up and manage a reflector if you want one

Here is where you set up and manage static talk groups. I have "SoCal" (31066) and CA "StateWide" (3106) set in this example.

You can set timed static talk groups here which are talk groups you want to become static at particular times (a net time for example).

# Managing static talk groups

To make California Statewide a Static on your hot spot, simply enter the TGID In the entry box on the left as shown below and click the right arrow



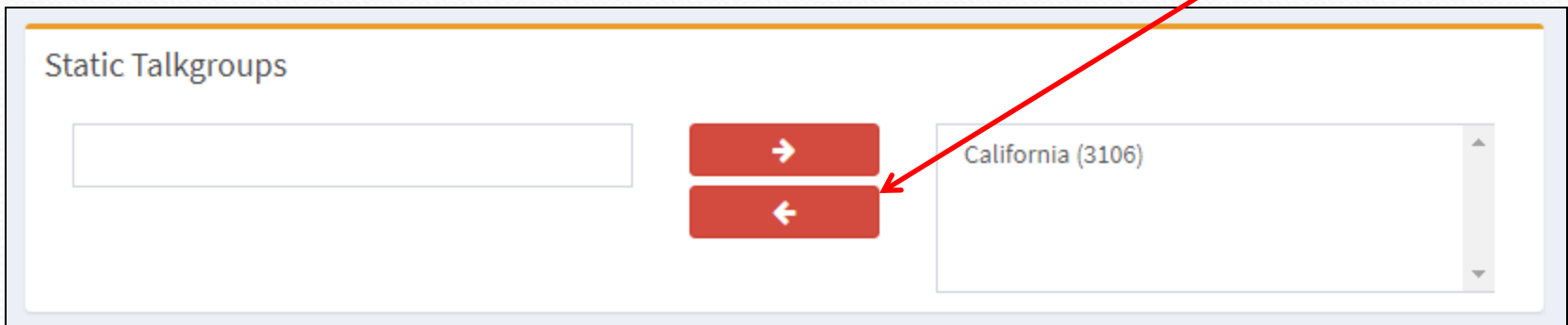
Static Talkgroups

3106

→

←

Now the entry, California (3106) has been moved to the right hand box and is static on your HotSpot. To delete it, highlight it and use the left arrow.



Static Talkgroups

California (3106)

→

←

# Managing Talk Groups

- You can set up additional ones as you like
- It is probably best to limit this to a couple that you really want to monitor since activity on static TG's will lock up your HS.
- If you key up on another TG, not in your list, it will be added as a dynamic TG. On HotSpots, these do not expire after 15 minutes like on repeaters. If one becomes annoying, you may need to kill it using the management tools.

# Setting up multiple HotSpots

- You can set up multiple HotSpots in Brandmeister by giving them different DMR ID numbers based on your DMR ID.
- If your DMR ID is 3107XXX, for example:
  - Your first one would be 3107XXX01
  - Your second one would be 3107XXX02
  - Your third one would be 3107XXX03
  - ...and so forth appending sequential digits to the back end of your DMR ID which becomes the ID for your hotspot on Brandmeister.



# Multiple HotSpot Example

The screenshot shows the BrandMeister User Dashboard. The left sidebar contains navigation options: User Dashboard, Last Heard, Repeaters (1859), Hotspots (5884), Masters (44), Alerts, Data Visualisation, Information, Services, and My hotspots. The main content area displays 'User Dashboard' with two summary cards: 'REPEATERS 1859' and 'MASTERS 44'. Below these is a 'Repeater in RX' section with a gauge showing '32'. At the bottom, there is a 'Latest BrandMeister News' section with a date of '3/10/2018' and a notification icon.

The 'My hotspots' section in the sidebar is circled in red and contains the following list:

- 3106564 (red power icon)
- 310656401 (green plug icon)
- 310656402 (red power icon)

Here is my setup for two hotspots, an OpenSpot and a ZUMspot:

The top number (3106564) is no longer used (unused numbers disappear from the list after 30 days of inactivity).

The second one (310656401) is my ZUMspot which is on-line (as indicated by the little green “plug” symbol).

The third one (310656402) is my OpenSpot, currently off-line (WRT Brandmeister). FWIW: It is “ON” but set up for DSTAR XRF012A at the moment. It shows in the list because Brandmeister has seen it within the last 30 days.

# ZUMspot/PiStar

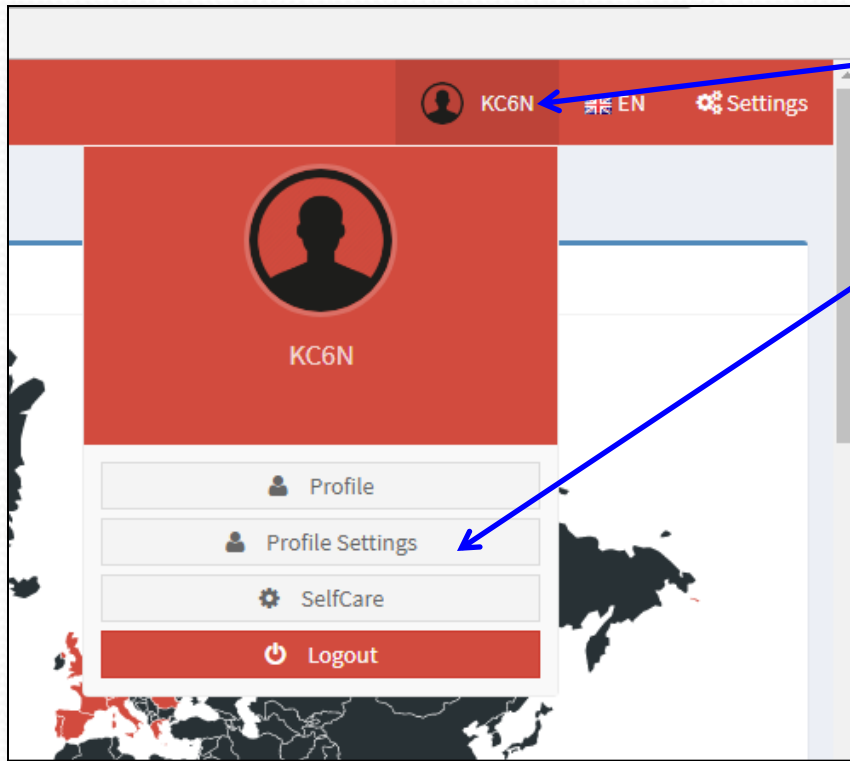
Appendix D

Adding a Brandmeister Self Care Panel to Pi-Star

# Adding BM Self Care to Pi-Star

- For those using Brandmeister, it is possible to add the self care features.
- This will allow you to manage your BM connected hotspot from the Pi-Star admin dashboard.
- This section assumes you will log into your established Brandmeister account, if you don't have an account, you will need to create one.

# Generate BM Pi-Star API Key



1. Log into your account and click on your callsign to see the drop down to the left.
2. Click "Profile Settings" in the dropdown.

# Adding BM Self Care to Pi-Star

The screenshot shows the BrandMeister user profile page for user KC6N in edit mode. The page is divided into three main sections: Information, Profile Settings, and Security Settings. The Information section displays fields for Name, Email Confirmed (status: NO), Created On, Last Edit, and Last Login. The Profile Settings section includes an Email Address field (dhull1@san.rr.com) and a Save Changes button. The Security Settings section includes Password and Confirm Password fields and an Update Password button. A yellow callout box with a blue arrow points to an "API Keys" button located in the top right corner of the Security Settings section.

BrandMeister KC6N EN Settings

User Dashboard KC6N's profile (Edit mode) User Dashboard > Profile > KC6N > Edit

Information

Name	
Email Confirmed	NO
Created On	0000-00-00 00:00:00
Last Edit	TODD
Last Login	TODD

Profile Settings

Email Address

dhull1@san.rr.com

Save Changes

Security Settings

API Keys

Click on the "API Keys" Button

The screenshot shows the BrandMeister API Keys page. The page title is "API Keys". Below the title, there is a warning message: "These keys are unique to your account and you must protect them carefully as they will allow programs and individuals to access and change your BrandMeister account information, as well as making any action on your behalf. By creating API key(s) below, you are taking full responsibility for their usage. API keys never expire but you can revoke them at anytime." Below the warning, there is a section for "Active keys" with a "Show 10 entries" dropdown and a search bar. A table with columns "Name" and "Actions" is present, but it is empty, displaying "No data available in table". A yellow callout box with a blue arrow points to an "Add" button in the top right corner of the "Active keys" section.

BrandMeister KC6N EN Settings

User Dashboard Profile > API Keys

API Keys

These keys are unique to your account and you must protect them carefully as they will allow programs and individuals to access and change your BrandMeister account information, as well as making any action on your behalf. By creating API key(s) below, you are taking full responsibility for their usage. API keys never expire but you can revoke them at anytime.

Active keys

Show 10 entries

Add

Search:

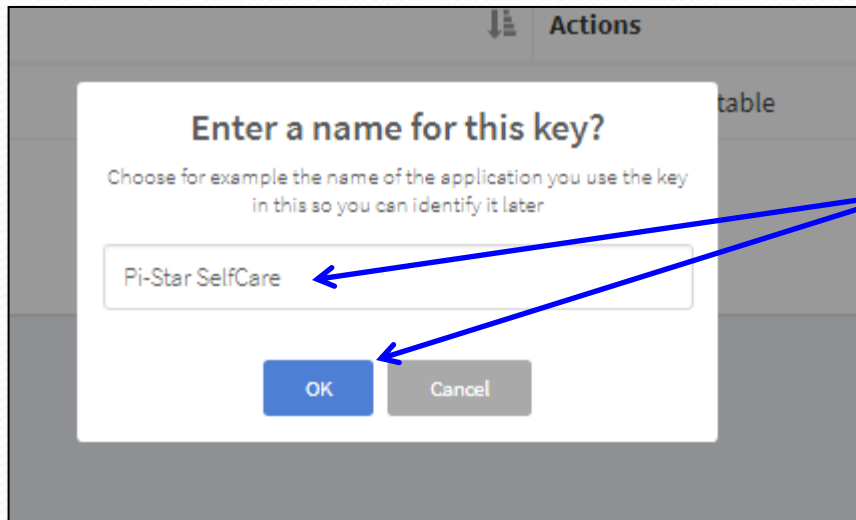
Name	Actions
No data available in table	

Showing 0 to 0 of 0 entries

Previous Next

On the new page, Click "Add"

# Adding BM Self Care to Pi-Star



At this point you will get a pop-up asking for a name for the key that will be created. Put one in and click OK. I used "Pi-Star SelfCare" as shown

When you click OK, BM will create an "API Key" that is unique to you. You will need to copy this to your clipboard to paste it into Pi-Star. Click "Copy" then click "OK"



# Adding API key to Pi-Star

1. Open Pi-Star in expert mode: by entering “http://pi-star/admin/expert” into your browser.
2. Click on “BM API Key” in the menu.

Pi-Star:3.4.11 / Dashboard:20180510

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

**Quick Editors:** DStarRepeater | ircDDBGateway | TimeServer | MMDVM Dash | DMRGateway | YSFGateway | P25Gateway  
**Full Editors:** DMRGateway | PiStar-Remote | WiFi Config | **BM API Key** | System Cron | RSSI Data | **Tools:** SSH Access

### Expert Editors

**\*\*WARNING\*\***

Pi-Star Expert editors have been created to make editing some of the extra settings in the config files more simple, allowing you to update some areas of the config files without the need to login to your Pi over SSH.

Please keep in mind when making your edits here, that these config files can be updated by the dashboard, and that your edits can be over-written. It is assumed that you already know what you are doing editing the files by hand, and that you understand what parts of the files are maintained by the dashboard.

With that warning in mind, you are free to make any changes you like, for help come to the Facebook group (link at the bottom of the page) and ask for help if / when you need it.  
73 and enjoy your Pi-Star experience.  
Pi-Star UK Team.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
MMDVMDash developed by Kim Huebel (DG9VH).  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Adding API key to Pi-Star

1. Paste your API Key in the box labeled “Key” in the resulting dialogue.

3. Click “Admin” to return to your admin dashboard

The screenshot shows the Pi-Star Digital Voice - Expert Editors admin interface. At the top right, it says "Pi-Star: 3.4.11 / Dashboard: 20180310". The main title is "Pi-Star Digital Voice - Expert Editors". Below the title is a navigation bar with links: "Dashboard | Admin | Update | Backup/Restore | Configuration". Underneath, there are sections for "Quick Editors" and "Full Editors". The "key" configuration form is visible, with a text input field containing a long alphanumeric string. Below the input field is an "Apply Changes" button. At the bottom of the page, there is a footer with copyright information and a link to the support group.

Pi-Star: 3.4.11 / Dashboard: 20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

key

apikey vLxGEvj5f6en6CyTh4goJZm9UfNd0nIw5daKIuPYA1jHDRxVW0gCLDMCTwP  
UTvoZiYGo@tkAvDe5rM.kyeXgSGSI9FA07Y\$QuEbu4v1z5gFw0DRzSLPHpF  
nzhYzpTxck

Apply Changes

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2016.  
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

2. Click on “Apply Changes”. Wait for the box to clear.



# New BM Self Care Panel

You will see a new “BrandMeister Manager” panel here.

Hostname: pi-star Pi-Star-3.4.11 / Dashboard: 20180310

## Pi-Star Digital Voice Dashboard for KC6N

Dashboard | Admin | Live Logs | Power | Update | Configuration

### Gateway Hardware Information

Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	4.9.35+	Pi Zero W Rev 1.1 (512MB)	4.39 / 4.71 / 4.52	42.8°C / 109°F

### Service Status

MMDV/Host	DMRGateway	YSFGateway	YSFParrrot	P25Gateway	P25Parrrot
DStarRepeater	incDOBGateway	TimeServer	PIStar-Watchdog	PIStar-Remote	PIStar-Keeper

### Modes Enabled

D-Star	DMR
YSF	P25
YSF2DMR	NXDN

### Network Status

D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR Net	NXDN Net
Internet	

### Radio Info

Trx	Listening
Tx	439.025000 MHz
Rx	439.025000 MHz
FM	ZUMSpot:v1.3.

### D-Star Repeater

RPT1	KC6N 8
RPT2	KC6N 6

### D-Star Network

APRS	social.aprs2.net
IRC	rr.openquad.net
Linked to REF012 A (DPlus Outgoing)	

### DMR Repeater

DMR ID	3106564
DMR CC	1
TS1	disabled
TS2	enabled
TG 31066	not linked
DMR Master	
BM United States	3103
YSF Network	
Room:	Alabama-Link

### D-Star Link Information

Radio	Default	Auto	Timer	Link	Linked to	Mode	Direction	Last Change (PDT)		
KC6N	B	REF012	A	Auto	Never	Up	REF012 A	DPlus	Outgoing	03:49:06 Mar 15th

### D-Star Link Manager

Radio Module	Reflector	Link / Un-Link	Action
KC6N B	REF012 A	<input checked="" type="radio"/> Link <input type="radio"/> UnLink	Request Change

### Active BrandMeister Connections

BrandMeister Master	Default Ref	Timeout(s)	Active Ref	Static TGS	Dynamic TGS
BM United States 3103	REF0	0(s)	None	TG3106	None

### BrandMeister Manager

Tools	Active Ref	Link / UnLink	Action
Drop QSO Drop All Dynamic	None	<input type="radio"/> Link <input checked="" type="radio"/> UnLink	Modify Reflector
Static Talkgroup	Slot	Add / Remove	Action
	<input type="radio"/> TS1 <input checked="" type="radio"/> TS2	<input type="radio"/> Add <input type="radio"/> Delete	Modify Static

### Gateway Activity

Time (PDT)	Mode	CallSign	Target	Src	Dur(s)	Loss	BER
14:34:20 Mar 15th	YSF	W4ONE	ALL at W4ONE	Net	0.5	0%	0.0%
14:32:40 Mar 15th	DMR Slot 2	W6FZA	TG 31066	Net	0.5	0%	0.0%
14:28:11 Mar 15th	D-Star	KC6LDN	CQCCQ via REF012 A	Net	0.6	0%	0.6%
14:26:12 Mar 15th	YSF	K4WHT	ALL at BM-Bridge	Net	1.6	0%	0.0%
14:24:59 Mar 15th	YSF	KT4ROY-ALL	ALL at KE4LTT	Net	0.2	0%	0.0%
14:21:29 Mar 15th	DMR Slot 2	W3SPK	TG 3106	Net	0.5	0%	0.0%
14:16:48 Mar 15th	DMR Slot 2	K6MDE	TG 3106	Net	0.5	0%	0.0%
14:07:55 Mar 15th	YSF	G3WGEKEITH	02034F06Bo at KE4LTT	Net	0.2	0%	0.0%
14:03:00 Mar 15th	YSF	KD7AAT	ALL at KD7AAT	Net	11.8	0%	0.0%
14:00:00 Mar 15th	D-Star	KC6N/TIME	CQCCQ via REF012 A	Net	3.6	0%	0.0%
13:58:56 Mar 15th	DMR Slot 2	K7FAY	TG 31066	Net	5.9	0%	0.0%
13:55:47 Mar 15th	D-Star	K6GGQ/51PL	CQCCQ via REF012 A	Net	0.3	0%	0.0%
13:54:56 Mar 15th	DMR Slot 2	K46RHL	TG 31066	Net	1.2	0%	0.0%
13:46:14 Mar 15th	DMR Slot 2	N68BF	TG 3106	Net	3.7	0%	0.0%
13:45:20 Mar 15th	D-Star	KC72ZN	CQCCQ via REF012 A	Net	0.1	0%	0.0%
13:44:30 Mar 15th	DMR Slot 2	W4ENC	TG 3106	Net	0.1	0%	0.0%
13:43:20 Mar 15th	D-Star	W6AAX	CQCCQ via REF012 A	Net	0.3	0%	0.0%
13:39:56 Mar 15th	YSF	W4VVSU	ALL at KE4LTT	Net	0.2	0%	0.0%
13:36:40 Mar 15th	D-Star	W4JFK T/ID31	CQCCQ via REF012 A	Net	0.3	0%	0.0%
13:29:50 Mar 15th	YSF	W4FSH	ALL at BM-Bridge	Net	6.5	0%	0.0%

### Local RF Activity

Time (PDT)	Mode	CallSign	Target	Src	Dur(s)	BER	RSSI
------------	------	----------	--------	-----	--------	-----	------

Pi-Star / Pi-Star Dashboard, © Andy Taylor (M0W0W2) 2014-2018.  
incDOBGateway Dashboard by Hans-J. Barthlen (DL5DI).  
MMDVMDash developed by Kim Huebel (DG9VH).  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

This provides most of the same BrandMeister “SelfCare” functionality without having to “fire up” (no pun intended\*) Brandmeister.

\*Brandmeister is “Fire Chief” in German.

# Revoking a key

API Keys

These keys are unique to your account and you must protect them carefully as they will allow programs and individuals to access and change your BrandMeister account information, as well as making any action on your behalf. By creating API key(s) below, you are taking full responsibility for their usage. API keys never expire but you can revoke them at anytime.

Active keys

Show 10 entries

Name	Actions
Pi-Star SelfCare	Revoke

Showing 1 to 1 of 1 entries

!

**Are you sure?**

Are you sure that you want to revoke this key?

No, cancel! Yes, revoke it!

Should you change your mind, you can clear the key in Pi-Star and “Revoke the Key” in Brandmeister and you are back to where you began.

# ZUMspot/PiStar

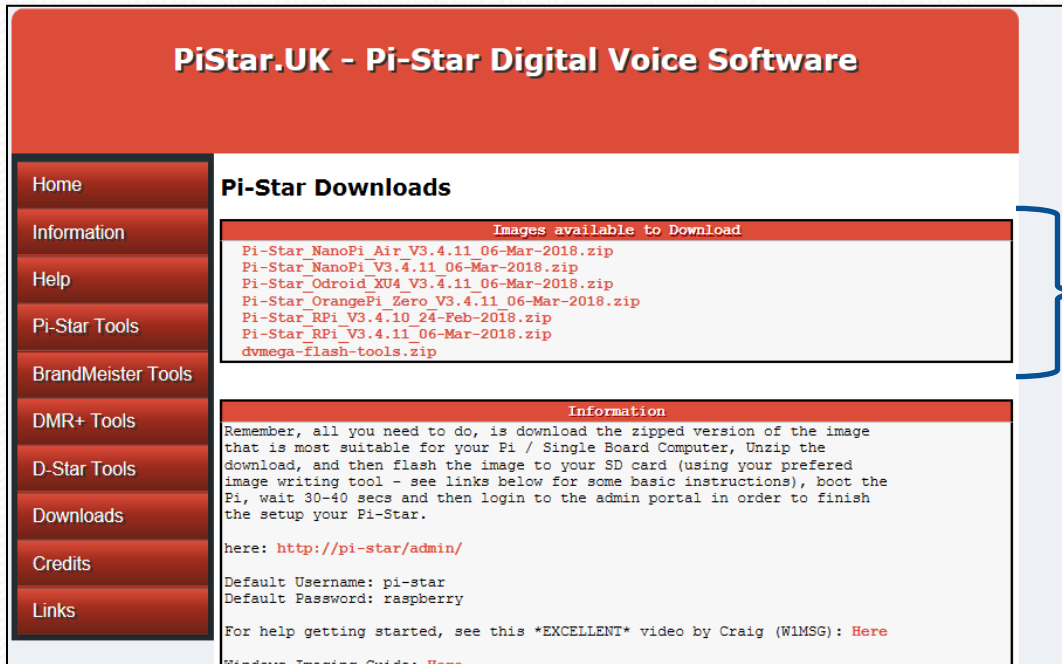
Appendix E

Updating the Pi-Star firmware

NOTE: This does NOT update the ZUMspot board FW. That is covered in a subsequent appendix.



# Updating Firmware (method 1):



The screenshot shows the PiStar.UK website interface. The header is "PiStar.UK - Pi-Star Digital Voice Software". On the left is a navigation menu with items: Home, Information, Help, Pi-Star Tools, BrandMeister Tools, DMR+ Tools, D-Star Tools, Downloads, Credits, and Links. The main content area is titled "Pi-Star Downloads" and contains two sections. The first section, "Images available to Download", lists several zip files: Pi-Star\_NanoPi\_Air\_V3.4.11\_06-Mar-2018.zip, Pi-Star\_NanoPi\_V3.4.11\_06-Mar-2018.zip, Pi-Star\_Odroid\_XU4\_V3.4.11\_06-Mar-2018.zip, Pi-Star\_OrangePi\_Zero\_V3.4.11\_06-Mar-2018.zip, Pi-Star\_RPi\_V3.4.10\_24-Feb-2018.zip, Pi-Star\_RPi\_V3.4.11\_06-Mar-2018.zip, and dvmege-flash-tools.zip. The second section, "Information", provides instructions on how to flash the image to an SD card and includes default login credentials (username: pi-star, password: raspberry) and a link to a video by Craig (W1MSG).

The current release versions are shown here. Pick the latest one that starts with "Pi-Star RPI".

If you decide you need an update, follow the instructions in Parts I, II and III to prepare a new card. Note that if you have a backup "zip" file from a previous setup (with working WiFi credentials), you may simply copy this file into the root directory of the freshly minted card (instead of the WPA\_suplicant.conf file as described in part II) and start your boot up. If you had set the "Use Dplus for XRF" switch (see appropriate appendix) you will need to do that again and do the update step.

# Updating Firmware (method 2)

- Log onto the Pi-Star admin expert page:
  - <http://pi-star/admin/expert/>

Pi-Star:3.4.11 / Dashboard:20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | DStarGateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Data | **Tools: SSH Access**

### Expert Editors

**\*\*WARNING\*\***

Pi-Star Expert editors have been created to make editing some of the extra settings in the config files more simple, allowing you to update some areas of the config files without the need to login to your Pi over SSH.

Please keep in mind when making your edits here, that these config files can be updated by the dashboard, and that your edits can be over-written. It is assumed that you already know what you are doing editing the files by hand, and that you understand what parts of the files are maintained by the dashboard.

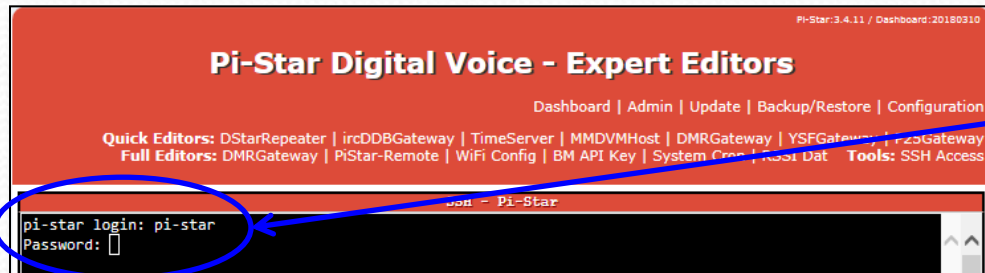
With that warning in mind, you are free to make any changes you like, for help come to the Facebook group (link at the bottom of the page) and ask for help if / when you need it.  
73 and enjoy your Pi-Star experiance.  
Pi-Star UK Team.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DLSDI),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Click  
“**Tools: SSH Access**”  
To bring up the built  
in SSH Editor. If you  
don’t see it, try a  
different browser.

Note: the method  
shown here (using  
SSH) is probably the  
best method if you  
already have a  
working build and  
just want to move to  
the latest version.

# Log into the SSH editor:



Log into the SSH Editor:  
User "pi-star" <enter>  
Password: "raspberr" <enter>



The Pi-Star SSH editor will open up as shown Here, with the command prompt:  
`pi-star@pi-star(ro):=~$`

# Updating/Upgrading using SSH

- To update the operating system and upgrade Pi-Star to the latest version (whatever it may be) do the following:
- From the command prompt issue:
  - `sudo pistar-update` <ENTER>
  - `sudo pistar-upgrade` <ENTER>
- Do these in the sequence shown.
- The first line updates the raspian OS, the second line upgrades Pi-Star.



# Enter the “update” command:

Pi-Star:3.4.11 / Dashboard:20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

```
SSH - Pi-Star
pi-star login: pi-star
Password:
Login incorrect
pi-star login: pi-star
Password:
Linux pi-star 4.9.35+ #1014 Fri Jun 30 14:34:49 BST 2017 armv6l

  PI-STAR
  v3.4.11

From your Windows Computer:
Pi-Star Dashboard: http://pi-star/

From your Apple iPhone, iPad, Macbook, iMac etc.
Pi-Star Dashboard: http://pi-star.local/

Pi-Star's disk is read-only by default, enable read-write with "rpi-w .
Pi-Star built by Andy Taylor (MW0MWZ), pi-star tools all start "pistar-".

pi-star@pi-star(ro):~$ sudo pistar-update
```

[Click here for fullscreen SSH client](#)

Pi-Star web config, © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? [Click here for the Support Group](#)  
Get your copy of Pi-Star from [here](#).

At the command prompt, pi-star@pi-star(ro):=#, enter the string “sudo pistar-update” Without the quotes as shown here and hit enter. This will update the OS.

# Wait for update to complete:

```
Pi-Star:3.4.11 / Dashboard:20180310
Pi-Star Digital Voice - Expert Editors
Dashboard | Admin | Update | Backup/Restore | Configuration
Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat  Tools: SSH Access

SSH - Pi-Star
Receiving objects: 100% (617/617), 213.38 KiB | 0 bytes/s, done.
Resolving deltas: 100% (437/437), completed with 21 local objects.
From https://github.com/AndyTaylorTweet/Pi-Star_DV_Dash
* branch          master       -> FETCH_HEAD
   3d0a1d7..72e4b37 master     -> origin/master
Updating 3d0a1d7..72e4b37
Fast-forward
 admin/configure.php      | 478 ++++++-----
 admin/expert/edit_ysfgateway.php | 3 +-
 config/version.php      | 2 +
 dstarrepeater/system.php | 25 +---
 index.php               | 54 +++++-
 lang/german_de.php      | 2 +
 mmdvmhost/bm_manager.php | 3 +-
 mmdvmhost/functions.php | 192 ++++++-----
 mmdvmhost/repeaterinfo.php | 13 +-
 mmdvmhost/tools.php     | 26 +---
 10 files changed, 658 insertions(+), 140 deletions(-)
Done
Updating PiStar-Firewall...
Done
Starting Services...
Done
Updates complete, sleeping for a few seconds before making the disk Read-Only
mount: / is busy
Finished
pi-star@pi-star(rw):~$
```

[Click here for fullscreen SSH client](#)

© Andy Taylor (MW0MWZ) 2014-2018.  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Let the flash process run to completion, You will see something like this when complete.

Now Pi-Star needs to be upgraded.

# Enter the “upgrade” command:

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

SSH - Pi-Star

```
Receiving objects: 100% (617/617), 213.38 KiB | 0 bytes/s, done.
Resolving deltas: 100% (437/437), completed with 21 local objects.
From https://github.com/AndyTaylorTweet/Pi-Star_DV_Dash
* branch      master      -> FETCH_HEAD
   3d0a1d7..72e4b37 master    -> origin/master
Updating 3d0a1d7..72e4b37
Fast-forward
 admin/configure.php          | 478 ++++++-----
 admin/expert/edit_ysfgateway.php | 3 +-
 config/version.php          | 2 +-
 dstarrepeater/system.php    | 25 ++--
 index.php                   | 54 +++++--
 lang/german_de.php          | 2 +-
 mmdvmhost/bm_manager.php    | 3 +-
 mmdvmhost/functions.php     | 192 ++++++-----
 mmdvmhost/repeaterinfo.php  | 13 +-
 mmdvmhost/tools.php         | 26 ++--
10 files changed, 658 insertions(+), 140 deletions(-)
Done
Updating PiStar-Firewall...
Done
Starting Services...
Done
Updates complete, sleeping for a few seconds before making the disk Read-Only
mount: / is busy
Finished
pi-star@pi-star(rw):~$ sudo pistar-upgrade
```

[Click here for fullscreen SSH client](#)

Pi-Star web config, © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? [Click here](#) for the Support Group  
Get your copy of Pi-Star from [here](#).

At the command prompt, pi-star@pi-star(ro):=#, enter the string “sudo pistar-upgrade” Without the quotes as shown here and hit enter. This will update Pi-Star to the latest version (whatever that may be). Note that it may be later than the one shown on the Pi-Star download site.

This procedure should always get you the latest build.

# Wait for upgrade to complete:

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

SSH - Pi-Star

```
dstarrepeater/system.php      25 +--+
index.php                     54 +++++-
lang/german_de.php            2 +-
mmdvmhost/bm_manager.php      3 +-
mmdvmhost/functions.php      192 ++++++-----
mmdvmhost/repeaterinfo.php    13 +-
mmdvmhost/tools.php           26 +--+
10 files changed, 658 insertions(+), 140 deletions(-)
Done
Updating PiStar-Firewall...
Done
Starting Services...
Done
Updates complete, sleeping for a few seconds before making the disk Read-Only
mount: / is busy
Finished
pi-star@pi-star(rw):~$ sudo pistar-upgrade
Detected Pi-Star 3.4.11 running on RPi hardware, attached to zumspotgpi modem...
Created symlink from /etc/systemd/system/multi-user.target.wants/nxdngateway.timer to /lib/systemd/system/nxdngateway.timer.
Created symlink from /etc/systemd/system/multi-user.target.wants/nxdnparrot.timer to /lib/systemd/system/nxdnparrot.timer.
Upgraded from 3.4.11 to 3.4.12...
Sleeping a few seconds before making the disk Read-Only...
mount: / is busy
Finished
pi-star@pi-star(rw):~$
```

[Click here for full-screen SSH client](#)

Pi-Star web console © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Let the flash process run to completion, You will see something like this when complete.

Now you can return to the dashboard and check the revision number at the top of the page. Note: I had to run this twice to get from 3.4.11 to 3.4.13

Pi-Star:3.4.13 / Dashboard: 20180506

## or KC6N

Dashboard | Admin | Configuration

et	Src	Dur (s)	Loss	BER
	Net	0.1	0%	0.0%
	Net	0.5	0%	0.0%

# ZUMspot/PiStar

Appendix F

Updating the ZUMspot board firmware

# Updating the ZUMspot FW

- The ZUMspot Pi Hat has it's own microcontroller with it's own firmware.
- This section will cover:
  - How to determine the installed ZUMspot FW version
  - How to determine the latest release FW version
  - How to update the ZUMspot flash memory with new FW using Pi-Star

# Checking your ZUMspot FW ver

The ZUMspot's currently installed Firmware is shown here on the main dashboard.

You can check the current release version here:

[https://github.com/juribeparada/MM-DVM\\_HS/releases](https://github.com/juribeparada/MM-DVM_HS/releases)

If you are ready for an update, Pi-Star has a built in methodology for doing this.

Hostname: pi-star Pi-Star:3.4.11 / Dashboard: 20180310

### Pi-Star Digital Voice Dashboard for KC6N

Dashboard | Admin | Configuration

Modes Enabled	
D-Star	DMR
YSF	P25
YSF2DMR	NXDN

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR Net	NXDN Net
Internet	

Radio Info	
Trx	Listening YSF
Tx	439.025000 MHz
Rx	438.025000 MHz
FW	ZUMspot:v1.3.3

D-Star Repeater	
RPT1	KC6N B
RPT2	KC6N G

D-Star Network	
APRS	socal.aprs2.net
IRC	rr.openquad.net
Linked to REF012 A (DPlus Outgoing)	

DMR Repeater	
DMR ID	3106564
DMR CC	1
TS1	disabled
TS2	enabled
TG 31066/not linked	

DMR Master	
EM United States	3103

YSF Network	
Room:	Alabama-Link

Gateway Activity									
Time (PDT)	Mode	Callsign	Target	Src	Dur (s)	Loss	BER		
14:47:03 Mar 16th	YSF	WJ4P	ALL at KE4LTI	Net	0.8	0%	0.0%		
14:46:42 Mar 16th	YSF	AA0RM	ALL at AA0RM	Net	0.1	0%	0.0%		
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0%	0.4%		
14:46:05 Mar 16th	D-Star	KC6N/IDS1	CQCCQC	RF	2.1	0%	0.0%		
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0%	0.2%		
14:44:41 Mar 16th	DMR Slot 2	AF6BY	TG 31066	Net	1.2	0%	0.0%		
14:41:36 Mar 16th	DMR Slot 2	VA3RLP	TG 31066	Net	0.8	0%	0.0%		
14:39:57 Mar 16th	DMR Slot 2	K7FAY	TG 31066	Net	4.4	0%	0.0%		
14:39:13 Mar 16th	D-Star	KC6N/INFO	CQCCQC	Net	6.5	0%	0.0%		
14:36:15 Mar 16th	D-Star	MLABC/INFO	CQCCQC	Net	2.5	0%	0.0%		

Local RF Activity									
Time (PDT)	Mode	Callsign	Target	Src	Dur (s)	BER	RSBI		
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0.4%	S9+46dB		
14:46:05 Mar 16th	D-Star	KC6N/IDS1	CQCCQC	RF	2.1	0.0%	S9+46dB		
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0.2%	S9+46dB		

Pi-Star / Pi-Star Dashboard. © Andy Taylor (M0GHWZ) 2014-2018.  
irc088Gateway Dashboard by Hans-J. Barthien (DL501).  
MMDVMDash developed by Kim Huebel (DG9VH).  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# ZUM board FW update Process

- Log onto the Pi-Star admin expert page:
  - <http://pi-star/admin/expert/>

Pi-Star:3.4.11 / Dashboard:20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | DStarGateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Data | **Tools: SSH Access**

### Expert Editors

**\*\*WARNING\*\***

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Please keep in mind when making your edits here, that these config files can be updated by the dashboard, and that your edits can be over-written. It is assumed that you already know what you are doing editing the files by hand, and that you understand what parts of the files are maintained by the dashboard.

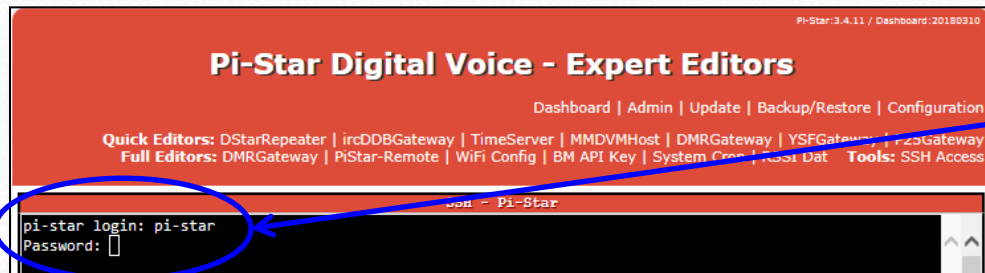
With that warning in mind, you are free to make any changes you like, for help come to the Facebook group (link at the bottom of the page) and ask for help if / when you need it.  
73 and enjoy your Pi-Star experiance.  
Pi-Star UK Team.

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MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

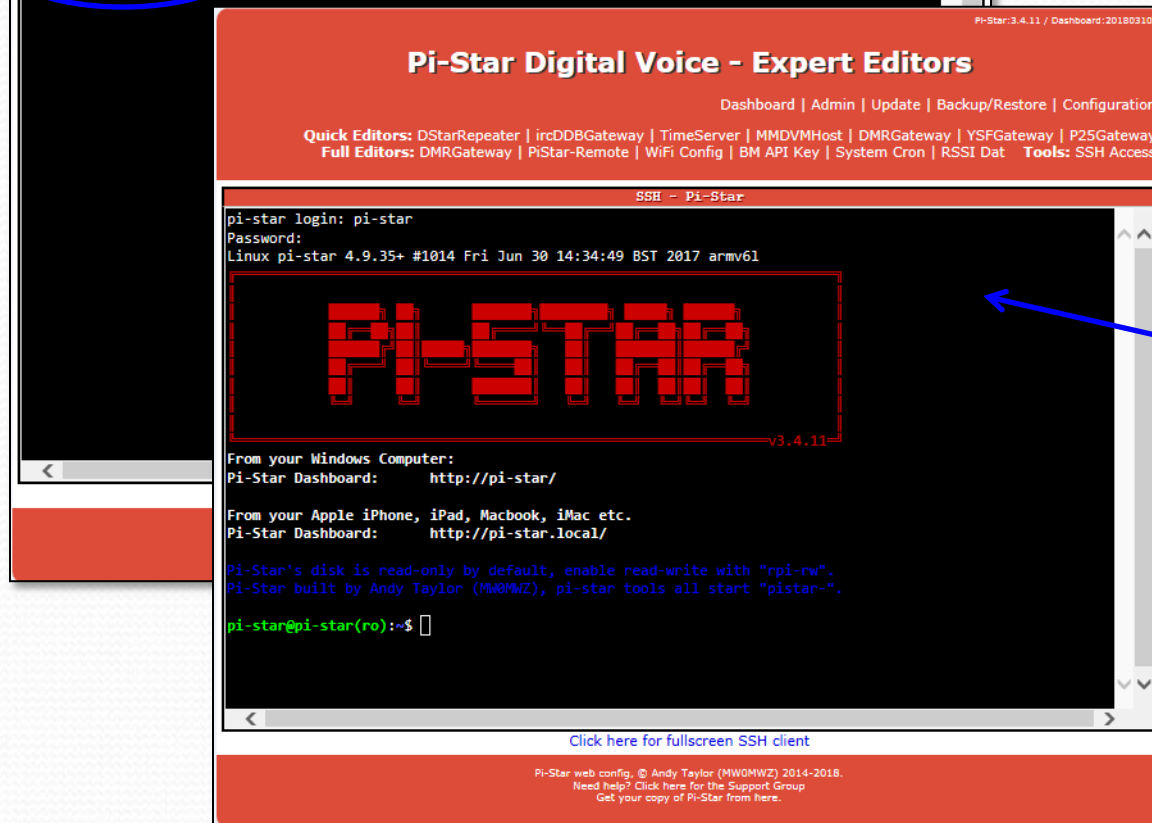
Click  
“**Tools: SSH Access**”  
To bring up the built  
in SSH Editor. If you  
don’t see it, try a  
different browser.



# Log into the SSH editor:



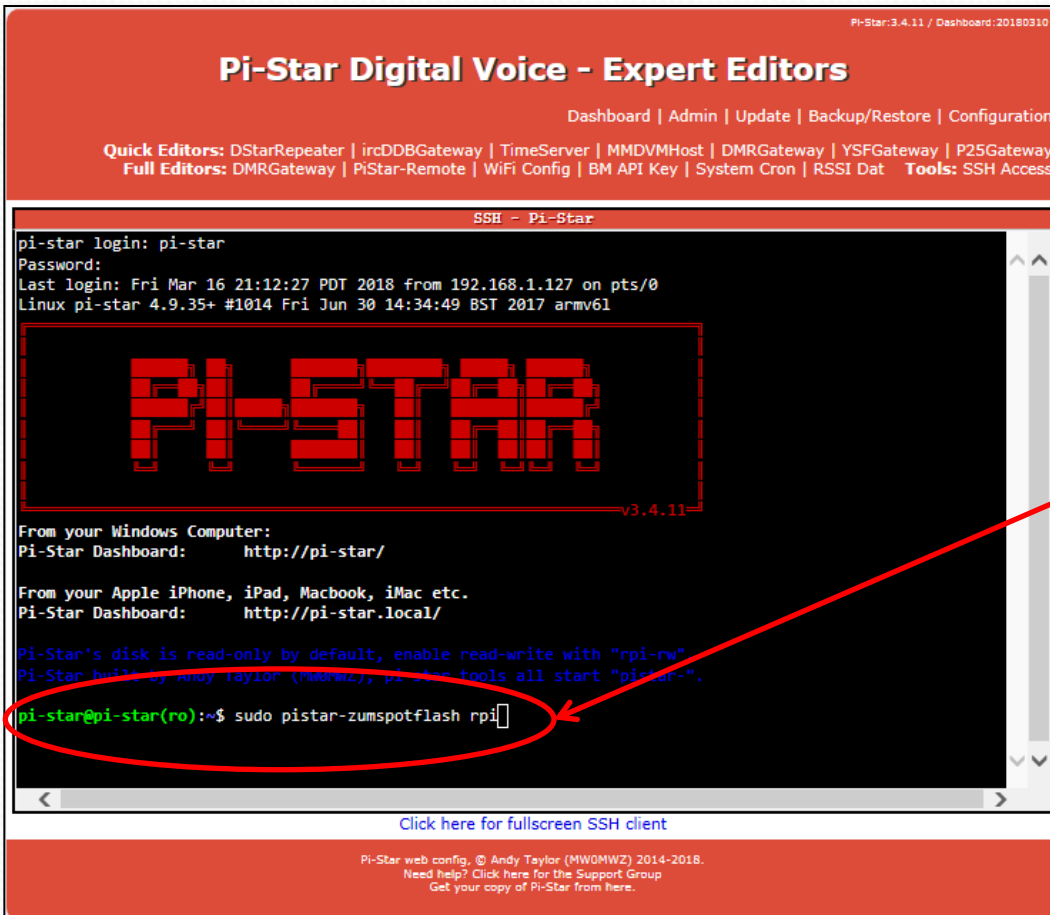
Log into the SSH Editor:  
User "pi-star" <enter>  
Password: "raspberr" <enter>



The Pi-Star SSH editor will open up as shown Here, with the command prompt:  
`pi-star@pi-star(ro):=~$`

# Enter the flash command:

At the command prompt, pi-star@pi-star(ro):=#, enter the string “sudo pistar-zumspotflash rpi” Without the quotes as shown here and hit enter.



Pi-Star:3.4.11 / Dashboard:20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

SSH - Pi-Star

```
pi-star login: pi-star
Password:
Last login: Fri Mar 16 21:12:27 PDT 2018 from 192.168.1.127 on pts/0
Linux pi-star 4.9.35+ #1014 Fri Jun 30 14:34:49 BST 2017 armv6l
```

**PI-STAR**  
v3.4.11

From your Windows Computer:  
Pi-Star Dashboard: <http://pi-star/>

From your Apple iPhone, iPad, Macbook, iMac etc.  
Pi-Star Dashboard: <http://pi-star.local/>

Pi-Star's disk is read-only by default, enable read-write with "rpi-rw"  
Pi-Star built by Andy Taylor (MW0MWZ), pi-star tools all start "pistar-".

```
pi-star@pi-star(ro):~$ sudo pistar-zumspotflash rpi
```

[Click here for fullscreen SSH client](#)

Pi-Star web config, © Andy Taylor (MW0MWZ) 2014-2018.  
Need help? [Click here for the Support Group](#)  
Get your copy of Pi-Star from [here](#).

# Wait for flash complete:

Let the flash process run to completion, follow any instructions presented. It will likely ask you to hit a key to begin a reboot. As usual, give the reboot about 3 minutes.

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

SSH - Pi-Star

```
remote: Total 163 (delta 0), reused 0 (delta 0), pack-reused 163
Receiving objects: 100% (163/163), 3.16 MiB | 818.00 KiB/s, done.
Resolving deltas: 100% (55/55), done.
Checking connectivity... done.
Raspberry Pi 2 or Pi Zero W detected
stm32flash Arduino_STM32_0.9
```

```
http://github.com/rogerclarkmelbourne/arduino_stm32
```

```
Using Parser : Raw BINARY
Interface serial_posix: 57600 8E1
Version      : 0x22
Option 1     : 0x00
Option 2     : 0x00
Device ID    : 0x0410 (Medium-density)
- RAM        : 20KiB (512b reserved by bootloader)
- Flash      : 128KiB (sector size: 4x1024)
- Option RAM : 16b
- System RAM : 2KiB
```

```
Write to memory
Erasing memory
Wrote and verified address 0x0800a47c (100.00%) Done.
```

```
Starting execution at address 0x08000000... done.
```

```
Flashing your rpi modem complete, press any key to reboot your Pi-Star System...
```

[Click here for fullscreen SSH client](#)

Pi-Star web config. © Andy Taylor (MWO MWZ) 2014-2018.  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Verify new ZUMspot FW ver.

Once the boot cycle completes you can verify the ZUMspot's new FW version on the main dashboard.

That's it, all done.

Hostname: pi-star Pi-Star:3.4.11 / Dashboard: 20180310

## Pi-Star Digital Voice Dashboard for KC6N

Dashboard | Admin | Configuration

Modes Enabled	
D-Star	DMR
YSF	P25
YSF2DMR	NXDN

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR Net	NXDN Net
Internet	

Radio Info	
Trx	Listening YSF
Tx	439.025000 MHz
Rx	439.025000 MHz
FW	ZUMspot:v1.3.3

D-Star Repeater	
RPT1	KC6N B
RPT2	KC6N G

D-Star Network	
APRS	social.aprs2.net
IRC	rr.openquad.net
Linked to REF012 A (DPlus Outgoing)	

DMR Repeater	
DMR ID	3106564
DMR CC	1
TS1	disabled
TS2	enabled
TG 31066/not linked	
DMR Master	
EM United States 3103	

YSF Network	
Room: Alabama-Link	

Gateway Activity									
Time (PDT)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER		
14:47:03 Mar 16th	YSF	WJ4P	ALL at KE4LTT	Net	0.8	0%	0.0%		
14:46:42 Mar 16th	YSF	AAOKM	ALL at AAOKM	Net	0.1	0%	0.0%		
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0%	0.4%		
14:46:05 Mar 16th	D-Star	KC6N/ID51	CQCCQC	RF	2.1	0%	0.0%		
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0%	0.2%		
14:44:41 Mar 16th	DMR Slot 2	AF6BY	TG 31066	Net	1.2	0%	0.0%		
14:41:36 Mar 16th	DMR Slot 2	VA3RLP	TG 31066	Net	0.8	0%	0.0%		
14:39:57 Mar 16th	DMR Slot 2	K7FAY	TG 31066	Net	4.4	0%	0.0%		
14:39:13 Mar 16th	D-Star	KC6N/INFO	CQCCQC	Net	6.5	0%	0.0%		
14:36:15 Mar 16th	D-Star	MLABC/INFO	CQCCQC	Net	2.5	0%	0.0%		

Local RF Activity							
Time (PDT)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI
14:46:29 Mar 16th	YSF	KC6N-DAVE	ALL	RF	1.2	0.4%	S9+46dB
14:46:05 Mar 16th	D-Star	KC6N/ID51	CQCCQC	RF	2.1	0.0%	S9+46dB
14:45:38 Mar 16th	DMR Slot 2	KC6N	TG 31066	RF	2.2	0.2%	S9+46dB

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
 ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
 MMDVMdash developed by Kim Huebel (DG9VH).  
 Need help? Click here for the Support Group  
 Get your copy of Pi-Star from here.

# ZUMspot/PiStar

Appendix G

Alternative bring up methodology

This works if you have 3.4.11 (or later). If you don't know what you have, I recommend the original WPA\_supplicant.conf method outlined in part II.

# Alternative bring up method

- If you have Pi-Star v3.4.11 (or later):
  - Configure a  $\mu$ -SD card as in Part I.
  - Power your HotSpot and search for the WiFi network “Pi-Star-Setup” and join it.
  - Point a browser session to <http://pi-star> (PC) or <http://pi-star.local> (MAC/IOS)
  - Log into Pi-Star setup and proceed as in part III.
  - Make sure you set up at least one WiFi

# ZUMspot/PiStar

Appendix H

Cross Mode Operation

# Cross-mode operation

- Pi-Star offers the ability to operate cross-mode between many (but not all) modes.
- This is achieved using bridges built into the pi-star framework.
- Each of the next few pages shows the setup needed to initialize a specific cross mode scenario.
- This section will be updated periodically as new capability is added to PiStar.



# Cross-mode YSF to NXDN

Turn “on” YSF mode and YSF2NXDN In the MMDVM Host Dialog as shown Below.

MMDVMHost Configuration			
Setting	Value		
DMR Mode:	<input type="checkbox"/>	RF Hangtime: 20	Net Hangtime: 20
D-Star Mode:	<input type="checkbox"/>	RF Hangtime: 20	Net Hangtime: 20
YSF Mode:	<input checked="" 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 checked="" type="checkbox"/> ←		
YSF2P25:	<input type="checkbox"/>		
DMR2YSF:	<input type="checkbox"/>	Uses 7 prefix on DMRGateway	
DMR2NXDN:	<input type="checkbox"/>	Uses 7 prefix on DMRGateway	
MMDVM Display Type:	OLED ▾	Port: /dev/ttyAMA0 ▾	Nextion Layout: G4KLX ▾
Apply Changes			

Note: For this mode to work, your Fusion radio must be in DN mode. The reason for this is that NXDN runs its vocoder at a rate of 3600 bits/s. This is the vocoder rate used by Yaesu System Fusion in its DN mode.

Click “Apply Changes” and wait for the reset to complete. Once it does, Fill out the Yaesu System Fusion Dialog as shown below. Select “YSF00003 – YSF2NXDN – YSF2NXDN Bridge” as your YSF Startup Host. Set your APRS Host, enter your NXDN ID (mine is shown). Select your desired NXDN “talk group” (last line) and “Apply Changes”.

Yaesu System Fusion Configuration	
Setting	Value
YSF Startup Host:	YSF00003 - YSF2NXDN - YSF2NXDN Bridge ▾ ←
APRS Host:	socal.aprs2.net ▾
(YSF2NXDN) NXDN ID:	6564 ←
NXDN Startup Host:	65000 - 176.9.1.168 ▾ ←
Apply Changes	

The DMR TG entry (last line here) determines which DMR talk group you will be using on NXDN.

# Cross-mode YSF to DMR

Turn “on” YSF mode and YSF2DMR in the MMDVM Host Dialog as shown Below.

MMDVMHost Configuration	
Setting	Value
DMR Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input type="checkbox"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input checked="" 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 checked="" 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
MMDVM Display Type:	OLED Port: /dev/ttyAMA0 Nextion Layout: G4KLX

Apply Changes

Note: For this mode to work, your Fusion radio must be in DN mode. The reason for this is that DMR runs its vocoder at a rate of 3600 bits/s. This is the vocoder rate used by Yaesu System Fusion in its DN mode.

Click “Apply Changes” and wait for the reset to complete. Once it does, Fill out the Yaesu System Fusion Dialog as shown below. Select “YSF00002 – YSF2DMR – YSF2DMR Bridge” as your YSF Startup Host. Set your APRS Host, enter your DMR ID (mine is shown) and DMR Master. Select a DMR “talk group” (last line) and “Apply Changes”.

Yaesu System Fusion Configuration	
Setting	Value
YSF Startup Host:	YSF00002 - YSF2DMR - YSF2DMR Bridge
APRS Host:	socal.aprs2.net
(YSF2DMR) CCS7/DMR ID:	3106564
DMR Master:	BM_United_States_3103
DMR TG:	31066

Apply Changes

The DMR TG entry (last line here) determines which DMR talk group you will be using on DMR.

# Cross-mode YSF to P25

Turn “on” YSF mode and YSF2P25 in the MMDVM Host Dialog as shown Below.

MMDVMHost Configuration			
Setting		Value	
DMR Mode:	<input type="checkbox"/>	RF Hangtime: 20	Net Hangtime: 20
D-Star Mode:	<input type="checkbox"/>	RF Hangtime: 20	Net Hangtime: 20
YSF Mode:	<input checked="" 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 checked="" type="checkbox"/> ←		
DMR2YSF:	<input type="checkbox"/>	Uses 7 prefix on DMRGateway	
DMR2NXDN:	<input type="checkbox"/>	Uses 7 prefix on DMRGateway	
MMDVM Display Type:	OLED ▾	Port: /dev/ttyAMA0 ▾	Nextion Layout: G4KLX ▾
Apply Changes			

Note: For this mode to work, you need to set your Fusion radio to VM mode. This forces the Fusion radio to run its vocoder at 7200 bits/s which is the P25 vocoder rate (and one reason that P25 audio is so good).

Click “Apply Changes” and wait for the reset to complete. Once it does, Fill out the Yaesu System Fusion Dialog as shown below. Select “YSF00004 – YSF2P25 – YSF2P25 Bridge” as your YSF Startup Host. Set your APRS Host, enter your DMR ID (mine is shown). Select your desired P25 “talk group” (last line) and “Apply Changes”.

Yaesu System Fusion Configuration	
Setting	Value
YSF Startup Host:	YSF00004 - YSF2P25 - YSF2P25 Bridge ←
APRS Host:	socal.aprs2.net ←
(YSF2P25) CCS7/DMR ID:	3106564 ←
P25 Startup Host:	10200 - dvswitch.org ←
Apply Changes	

The “P25 Startup Host” selection determines where you will show up on P25.

# Cross-mode DMR to YSF/FCS

Turn “on” DMR mode and DMR2YSF in the MMDVM Host Dialog as shown Below.

Setting	Value
DMR Mode:	<input checked="" type="checkbox"/>
D-Star Mode:	<input type="checkbox"/>
YSF Mode:	<input type="checkbox"/>
P25 Mode:	<input type="checkbox"/>
NXDN Mode:	<input type="checkbox"/>
YSF2DMR:	<input type="checkbox"/>
YSF2NXDN:	<input type="checkbox"/>
YSF2P25:	<input type="checkbox"/>
DMR2YSF:	<input checked="" type="checkbox"/>
DMR2NXDN:	<input type="checkbox"/>
MMDVM Display Type:	OLED
Port:	/dev/ttyAMA0
Nextion Layout:	G4KLX

Apply Changes

Note: This page illustrates the simplest of two ways to bridge DMR to YSF. This requires the MMDVMHost settings shown to the left and the DMR master setting of DMR2YSF shown below. In this mode all you need for your DMR radio is a talk group (any TG ID will do) that is on the correct frequency, color code and timeslot.

Click “Apply Changes” and wait for the reset to complete. Once it does, change the DMR Master to “DMR2YSF” in the “DMR Configuration” pane. This mode uses the “YSF Startup Host” to determine the target room for YSF. Click “Apply Changes.”

Setting	Value
DMR Master:	DMR2YSF
DMR Color Code:	1
DMR EmbeddedLCOnly:	<input type="checkbox"/>
DMR DumpTADData:	<input checked="" type="checkbox"/>

Apply Changes

Setting	Value
YSF Startup Host:	YSF02034 - Alabama-Link - Alabama-Link
APRS Host:	socal.aprs2.net

Apply Changes

The setting chosen for the “YSF Startup Host” determines the room you will be talking into. This mode works in both networks, YSF and FCS.

# Cross-mode DMR to NXDN

Turn “on” DMR mode and DMR2NXDN as shown Below.

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 checked="" type="checkbox"/>	Uses 7 prefix on DMRGateway	
MMDVM Display Type:	OLED	Port: /dev/ttyAMA0	Nextion Layout: G4KLX
<input type="button" value="Apply Changes"/>			

Note: This page illustrates the simplest of two ways to bridge DMR to NXDN. This requires the MMDVMHost settings shown to the left and the DMR master setting of DMR2NXDN shown below. You will need to program channels in your DMR radio for the NXDN talk groups that you intend to use. The DMR Channel TGID will be the NXDN TGID.

Click “Apply Changes” and wait for the reset to complete. Once it does, change the DMR Master to “DMR2NXDN” in the “DMR Configuration” pane. The DMR2NXDN gateway passes the talk group set in the DMR radio so it doesn’t really matter how the NXDN Host is set. Click “Apply Changes.”

DMR Configuration	
Setting	Value
DMR Master:	DMR2NXDN
DMR Color Code:	1
DMR EmbeddedLCOnly:	<input type="checkbox"/>
DMR DumpTADData:	<input checked="" type="checkbox"/>
<input type="button" value="Apply Changes"/>	

For example: To talk on the World Wide NXDN talk group, set a talk group in your DMR radio for TGID=65000.

NXDN Configuration	
Setting	Value
NXDN Startup Host:	None
NXDN RAN:	1
<input type="button" value="Apply Changes"/>	

In this mode, the NXDN Startup Host setting is ignored, I recommend setting this to “None”.

# Cross-mode operation Notes

- You can have other modes operational while using cross-mode and the ZUMspot will scan.
- The mode you are crossing over to should not be enabled. In other words if you are setting up DMR2NXDN set the NXDN switch to “off”.
- You may want to create backup files for specific “setups”. Simply create a backup and re-name it for clarity.

# Cross-mode operation notes

MMDVMHost Configuration			
Setting	Value		
DMR Mode:	<input checked="" type="checkbox"/>	RF Hangtime: 20	Net Hangtime: 20
D-Star Mode:	<input checked="" type="checkbox"/>	RF Hangtime: 20	Net Hangtime: 20
YSF Mode:	<input checked="" 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 checked="" type="checkbox"/>		
DMR2YSF:	<input type="checkbox"/>	Uses 7 prefix on DMRGateway	
DMR2NXDN:	<input type="checkbox"/>	Uses 7 prefix on DMRGateway	
MMDVM Display Type:	OLED	Port: /dev/ttyAMA0	Nextion Layout: G4KLX

Apply Changes

Yaesu System Fusion Configuration	
Setting	Value
YSF Startup Host:	YSF00004 - YSF2P25 - YSF2P25 Bridge
APRS Host:	socal.aprs2.net
(YSF2P25) CCS7/DMR ID:	3106564
P25 Startup Host:	10200 - dvswitch.org

Apply Changes

Here the ZUMspot is set up to scan for signals on DMR, DSTAR, and YSF but the YSF is actually listening for signals coming in from P25 reflector 10200 (P25 North America).

# Final note on cross mode

- There are multiple ways to implement some of these cross-mode features. I have tried to show the most straightforward one in the examples in this section, hence I did not show the use of the “DMR Gateway” which is another option. I will cover that in a future addition when I talk about DMR+.



# ZUMspot/PiStar

Appendix I

Controlling Pi-Star from your radio

# Pi-Star Remote Control

- Pi-Star includes features which allow your hotspot to be controlled remotely over the air.
- Codes for Reboot, Power Down, etc. are available in each mode.
- These can be accessed from the admin/expert pages by pointing the browser to:
- <http://pi-star/admin/expert/>

# Pi-Star remote control modes

- Log onto the Pi-Star admin expert page:
  - <http://pi-star/admin/expert/>

Click  
“PiStar Remote”  
To bring up the  
remote control code  
page.

Pi-Star:3.4.11 / Dashboard:20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | **PiStar-Remote** | Wiki Config | BM API Key | System Cron | RSSI Dat Tools: SSH Access

### Expert Editors

**\*\*WARNING\*\***

Pi-Star Expert editors have been created to make editing some of the extra settings in the config files more simple, allowing you to update some areas of the config files without the need to login to your Pi over SSH.

Please keep in mind when making your edits here, that these config files can be updated by the dashboard, and that your edits can be over-written. It is assumed that you already know what you are doing editing the files by hand, and that you understand what parts of the files are maintained by the dashboard.

With that warning in mind, you are free to make any changes you like, for help come to the Facebook group (link at the bottom of the page) and ask for help if / when you need it.  
73 and enjoy your Pi-Star experiance.  
Pi-Star UK Team.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DLSDI),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Pi-Star remote control modes

Pi-Star:3.4.11 / Dashboard:20180323

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat | Tools: SSH Access

```
[banner]
# Pi-Star Remote config file
# This config file is designed for the Pi-Star Keeper remote control
# The remote control system is designed to give repeater keepers an
# RF KillSwitch for their repeaters.

[enable]
# Is the Keeper Enabled? (true|false)
enabled = true

[keeper]
# Keepers Information
callsign=KC6N

[d-star]
# UR fields
svckill=SVCKILL
svcrestart=SVCRSTRT
reboot=REBOOTPI
shutdown=SHUTDOWN

[dmr]
# TG commands
svckill=9999999
svcrestart=99999998
reboot=9999997
shutdown=9999996

[ysf]
# ROOM Ccommands
svckill=99999
svcrestart=999998
reboot=99997
shutdown=99996
```

Apply Changes

Pi-Star / Pi-Star Dashboard, © Andy Taylor (M0QMWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DLSDI),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Here is where you will find all of the “mode compatible” commands needed to operate your hotspot remotely via your radio.

Make sure that “Keeper” is enabled here, make sure that your callsign is set as the “Keeper”

For DSTAR: you need to make these commands available in the “UR Call” field of your radio.

For DMR: you need to these talk group commands and create channels for these in your zone.

Fusion uses “room codes” of course

# Pi-Star remote control DSTAR

20171129\_KC6N.icf - CS-51PLUS

File View COM Port Clone Option Help

ID-51

- Memory CH
- CALL CH
- Program Scan Link
- BC Radio Memory
- DTMF Memory
- Digital
  - Your Call Sign**
- Repeater List
- My Station
- Transmitted Call Record
- Received Call Record
- Digital Setting

GPS

- Common Setting
- A/B Band Setting

Your Call Sign (Remain 23 memories)		
No.	Name	Call Sign
169	link to REF056A	REF056AL
170	link to REF056B	REF056BL
171	link to REF056C	REF056CL
172	link to REF056D	REF056DL
173	Link to XRF012A	XRF012AL
174	Link to XRF210D	XRF210DL
175	PiStar Reboot	REBOOTPI
176	PiStar Shutdown	SHUTDOWN
177	CMDR Reboot	REBOOT
New		

Add the commands to the “UR Call” (or Your Call) memory of your DSTAR radio so that they are accessible in DR mode. The commands REBOOTPI and SHUTDOWN are shown here. You may have these for other devices as well as shown.

# Pi-Star Remote Control DMR

Pi-Star:3.4.11 / Dashboard:20180323

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

**Quick Editors:** DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
**Full Editors:** DMRGateway | PiStar-Remote | WiFi Config | BM API Key | System Cron | RSSI Dat **Tools:** SSH Access

```
[banner]
# Pi-Star Remote config file
# This config file is desgied for the Pi-Star Keeper remote control
# The remote control system is desgied to give repeater keepers an
# RF KillSwitch for their repeaters.

[enable]
# Is the Keeper Enabled? (true|false)
enabled = true

[keeper]
# Keepers Information
callsign=KC6N

[d-star]
# UR fields
svckill=SVCKILL
svcrestart=SVCRSTRT
reboot=REBOOTPI
shutdown=SHUTDOWN

[dmr]
# TG commands
svckill=8999999
svcrestart=8999998
reboot=8999997
shutdown=8999996

[ysf]
# ROOM Ccommands
svckill=99999
svcrestart=99998
reboot=99997
shutdown=99996
```

Apply Changes

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DLSDI),  
MMDVMdash developed by Kim Huebel (DG9VH).  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

The default commands for DMR begin with “9” as shown earlier. You will need to change these to avoid conflicts with some commands that Brandmeister uses internally. So, for example, edit svckill to “8999999” (from “9999999”), etc. ... as shown here. There may be other options as well (thanks to Michael Rickey, AF6FB for this one).

It would appear that you can edit any of these to be anything you want as long as it doesn't create a conflict somewhere. As always don't forget to “Apply Changes” when done.

Do a back up so these are saved.

# Pi-Star Remote Control DMR (2)

- You will need to add 2 Private Call ID's
  - PiStar Reboot, PCID=89999997
  - PiStar Shutdown, PCID=89999996
- Access these in whatever way works best for you.
  - I create a couple PC ID's as shown above
  - You can add these to a zone or just search for them in your contact list. You can also “Manual Dial” the numbers if you remember them.

# Pi-Star Remote Control FUSION

- Similarly to DMR, You will make a manual call to the appropriate “room number”
  - Reboot PiStar, TGID=99997
  - Shutdown PiStar, TGID=99996
- To run this:
  - Connect to your HotSpot in YSF mode
  - Key in the code using DTMF mode.



# ZUMspot/PiStar

Appendix J

Solving BER issues using offset adjustments

# Pi-Star Offset adjustments

- Pi-Star includes a facility to adjust for the frequency offset of the modem relative to the radio.
- This issue manifests itself as excessive bit error rate (BER) on receive or sometimes an inability to lock to incoming signals.
- These can be accessed from the admin/expert pages by pointing the browser to: <http://pi-star/admin/expert/>

# Pi-Star Offset adjustments

- Log onto the Pi-Star admin expert page:
  - <http://pi-star/admin/expert/>

Click  
“MMDVM Host”  
To bring up the  
MMDVM Host page.



Pi-Star:3.4.11 / Dashboard:20180310

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

**Quick Editors:** DStarRepeater | ircDDBGateway | TimeServer | **MMDVMHost** | DStarGateway | YSFGateway | P25Gateway  
**Full Editors:** DMRGateway | PiStar-Remote | WiFi Config | DM API Key | System Cron | RSSI Data | **Tools:** SSH Access

### Expert Editors

**\*\*WARNING\*\***

Pi-Star Expert editors have been created to make editing some of the extra settings in the config files more simple, allowing you to update some areas of the config files without the need to login to your Pi over SSH.

Please keep in mind when making your edits here, that these config files can be updated by the dashboard, and that your edits can be over-written. It is assumed that you already know what you are doing editing the files by hand, and that you understand what parts of the files are maintained by the dashboard.

With that warning in mind, you are free to make any changes you like, for help come to the Facebook group (link at the bottom of the page) and ask for help if / when you need it.  
73 and enjoy your Pi-Star experiance.  
Pi-Star UK Team.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DLSD1),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Pi-Star Offset adjustments

Modem	
Port	/dev/ttyAMA0
TXInvert	1
RXInvert	0
PTTInvert	0
TXDelay	100
RXOffset	0
TXOffset	0
DMRDelay	100
RXLevel	50
TXLevel	100
CWIdTXLevel	50
D-StarTXLevel	50
DMRTXLevel	50
YSPTXLevel	50
P25TXLevel	50
RSSIMappingFile	/usr/local/etc/RSSI.dat
Trace	0
Debug	0
RFLLevel	100
RXDCOffset	0
TXDCOffset	0
NXDNTXLevel	50

Apply Changes

TMP

In the “Modem” section you will probably see:

RXOffset = 0


TXOffset = 0

As shown here.

You can move these positive or negative to optimize the BER issue as shown below.

Be careful with this and don't change anything else.

Apply changes and update your backup.



RXOffset	-250
TXOffset	-250
TXDelay	100

# ZUMspot/PiStar

Appendix K

Customizing Pi-Star Dashboard Colors

# Customizing PiStar Colors

- Pi-Star includes the capability to customize the dashboard display colors.
- This can be accessed from the admin/expert pages by pointing the browser to: <http://pi-star/admin/expert/> , logging into Pi-Star and selecting “**Tools: CSS Tool**” from the expert options.
- This will open the CSS menu shown on the following page.

# Customizing Pi-Star Colors

Pi-Star: 3.4.13 / Dashboard: 20180527

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi | BM API | System Cron | RSSI Dat **Tools: CSS Tool** | SSH Access

### Expert Editors

**\*\*WARNING\*\***

Pi-Star Expert editors have been created to make editing some of the extra settings in the config files more simple, allowing you to update some areas of the config files without the need to login to your Pi over SSH.

Please keep in mind when making your edits here, that these config files can be updated by the dashboard, and that your edits can be over-written. It is assumed that you already know what you are doing editing the files by hand, and that you understand what parts of the files are maintained by the dashboard.

With that warning in mind, you are free to make any changes you like, for help come to the Facebook group (link at the bottom of the page) and ask for help if / when you need it.  
73 and enjoy your Pi-Star experience.  
Pi-Star UK Team.

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
MMDVMDash developed by Kim Huebel (DG9VH).  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Click  
"Tools: CSS Tool"  
To bring up the CSS Tool page.

Entries specify the color for various aspects of the user interface dashboard in terms of six digit hexadecimal entries representing the color in terms of (Red value, Green value, Blue value). Pure red would be (ff0000) representing (255, 0, 0). The banner default, for example, is (dd4b39).

Pi-Star: 3.4.13 / Dashboard: 20180527

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi | BM API | System Cron | RSSI Dat **Tools: CSS Tool** | SSH Access

### Background

Page	edf0f5
Content	ffffff
Banners	dd4b39

Apply Changes

### Text

Banners	ffffff
BannersDrop	303030

Apply Changes

### Tables

HeadDrop	8b0000
BgEven	f7f7f7
BgOdd	d0d0d0

Apply Changes

### Content

Text	000000
------	--------

Apply Changes

### BannerB2

Enabled	0
Text	Some Text

Apply Changes

### BannerExtText

Enabled	0
Text	Some long text entry

Apply Changes

if you took it all too far and now it makes you feel sick, click below to reset.

Factory Reset

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),  
MMDVMDash developed by Kim Huebel (DG9VH).  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Customizing PiStar Colors

- Use a color picker (many available) to calculate the color values.
- One can be found here:  
[https://www.w3schools.com/colors/colors\\_picker.asp](https://www.w3schools.com/colors/colors_picker.asp)
- This will allow you to pick a color and it will give you the proper hexadecimal numeric value to load.
- See example on next bage



# Customizing Pi-Star Colors


1. Pick a color you like here

2. See your selected color here

HTML Color Picker

< Previous Next >

Pick a Color:



Or Enter a Color:

Colorvalue  OK

Selected Color:

Black Text  
Shadow  
White Text  
Shadow

Lighter / Darker:

100%	#ffffff
95%	#e6eeff
90%	#ccddff
85%	#b3ccff
80%	#99bbff
75%	#80aaff
70%	#6699ff
65%	#4d88ff
60%	#3377ff
55%	#1a66ff
50%	#0055ff
45%	#004de6
40%	#0044cc
35%	#003cb3
30%	#003399
25%	#002b80
20%	#002266
15%	#001a4d
10%	#001133
5%	#00091a
0%	#000000

**#6699ff**  
rgb(102, 153, 255)  
hsl(220, 100%, 70%)

3. The "Hex" number you need is here. (type this into the appropriate Pi-Star field to set your color)

[https://www.w3schools.com/colors/colors\\_picker.asp](https://www.w3schools.com/colors/colors_picker.asp)

# Customizing Pi-Star Colors

So let's change the background banners to the blue color we picked on the previous page. Change the default from "dd4b39" to "6699ff" and Apply Changes.

Pi-Star 3.4.13 / Dashboard: 20180527

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi | BM API | System Cron | RSSI Data | Tools: CSS Tool | SSH Access

Background	
Page	edf0f5
Content	ffffff
Banners	dd4b39
Apply Changes	

Text	
Banners	ffffff
BannersDrop	303030
Apply Changes	

Tables	
HeadDrop	8b0000
BgEven	f7f7f7
BgOdd	d0d0d0
Apply Changes	

Content	
Text	000000
Apply Changes	

BannerB2	
Enabled	0
Text	Some Text
Apply Changes	

BannerExtText	
Enabled	0
Text	Some long text entry
Apply Changes	

if you took it all too far and now it makes you feel sick, click below to reset.

Factory Reset

Pi-Star / Pi-Star Dashboard, © Andy Taylor (M0M0WZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthel (DL501),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

Pi-Star 3.4.13 / Dashboard: 20180527

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | WiFi | BM API | System Cron | RSSI Data | Tools: CSS Tool | SSH Access

Background	
Page	edf0f5
Content	ffffff
Banners	6699ff
Apply Changes	

Text	
Banners	ffffff
BannersDrop	303030
Apply Changes	

Tables	
HeadDrop	8b0000
BgEven	f7f7f7
BgOdd	d0d0d0
Apply Changes	

Content	
Text	000000
Apply Changes	

BannerB2	
Enabled	0
Text	Some Text
Apply Changes	

BannerExtText	
Enabled	0
Text	Some long text entry
Apply Changes	

if you took it all too far and now it makes you feel sick, click below to reset.

Factory Reset

Pi-Star / Pi-Star Dashboard, © Andy Taylor (M0M0WZ) 2014-2018.  
ircDDBGateway Dashboard by Hans-J. Barthel (DL501),  
MMDVMDash developed by Kim Huebel (DG9VH),  
Need help? Click here for the Support Group  
Get your copy of Pi-Star from here.

# Customizing Pi-Star Colors

Hostname: pi-star Pi-Star:3.4.13 / Dashboard: 20180527

## Pi-Star Digital Voice Dashboard for KC6N

Dashboard | Admin | Configuration

**Modes Enabled**

D-Star DMR  
YSF P25  
YSF XMode NXDN

**Network Status**

D-Star Net DMR Net  
YSF Net P25 Net  
YSF2DMR NXDN Net  
YSF2NXDN YSF2P25

**Radio Info**

Trx Listening DMR  
Tx 439.025000 MHz  
Rx 439.025000 MHz  
FW ZUMspot:v1.3.3

**D-Star Repeater**

RPT1 KC6N E  
RPT2 KC6N G

**D-Star Network**

APRS social.aprs2.net  
IRC rr.openquad.net  
Linked to REF012 A (DPlus Outgoing)

**DMR Repeater**

DMR ID 31066401  
DMR CC 1  
TS1 disabled  
TS2 enabled  
TG 31066/not linked  
DMR Master  
BM United States 3103

**YSF Network**

Linked to: FCS003-16

**Gateway Activity**

Time (PDT)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER
13:29:48 May 28th	DMR Slot 2	N2JHJ	TG 31066	Net	0.8	0%	0.0%
13:28:30 May 28th	D-Star	KC6ESW/ID51	CQCCQC	Net	2.2	0%	0.0%
13:23:14 May 28th	D-Star	WD6F2A/ID51	CQCCQC	Net	13.0	0%	0.0%
13:17:21 May 28th	DMR Slot 2	W6AAX	TG 31066	Net	12.7	0%	0.0%
13:17:08 May 28th	DMR Slot 2	KC6ESW	TG 31066	Net	8.4	0%	0.0%
13:12:33 May 28th	DMR Slot 2	WD6FOX	TG 31066	Net	2.6	0%	0.0%
13:07:34 May 28th	DMR Slot 2	KB9YYN	TG 31066	Net	0.1	0%	0.0%
13:06:33 May 28th	DMR Slot 2	N1KN	TG 31066	Net	1.2	0%	0.0%
13:04:09 May 28th	D-Star	WONWA R	CQCCQC	Net	0.3	0%	0.0%
13:00:00 May 28th	D-Star	KC6N/TIME	CQCCQC	Net	3.7	0%	0.0%
12:52:37 May 28th	DMR Slot 2	KK6LDW	TG 31066	Net	0.5	0%	0.0%
12:41:33 May 28th	DMR Slot 2	K6BOS	TG 31066	Net	0.5	0%	0.0%
12:36:47 May 28th	DMR Slot 2	N6ARP	TG 31066	Net	0.5	0%	0.0%
12:38:04 May 28th	DMR Slot 2	KC6N	TG 31066	Net	5.9	0%	0.0%
12:32:55 May 28th	DMR Slot 2	W6MAT	TG 31066	Net	7.7	0%	0.0%
12:25:05 May 28th	D-Star	W6AAX	CQCCQC	Net	2.7	0%	0.0%
12:17:49 May 28th	DMR Slot 2	K1NRA	TG 31066	Net	0.5	0%	0.0%
12:12:30 May 28th	DMR Slot 2	N6YN	TG 31066	Net	0.5	0%	0.0%
12:11:23 May 28th	D-Star	A16KJ/ID51	CQCCQC	Net	2.0	0%	0.0%
12:07:48 May 28th	DMR Slot 2	KE6GVK	TG 31066	Net	0.8	0%	0.0%

**Local RF Activity**

Time (PDT)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI
------------	------	----------	--------	-----	--------	-----	------

New dashboard with new colors.

Pi-Star:3.4.13 / Dashboard: 20180527

## Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Backup/Restore | Configuration

Quick Editors: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMRGateway | YSFGateway | P25Gateway  
Full Editors: DMRGateway | PiStar-Remote | Wifi | BM API | System Cron | RSSI Dat Tools: CSS Tool | SSH Access

**Background**

Page: edf0f5  
Content: ffffff  
Banner: 6699ff

Apply Changes

**Text**

Banner: ffffff  
BannerDrop: 303030

Apply Changes

**Tabbars**

HeadDrop: 8b0000  
BgEven: f7f7f7  
BgOdd: d0d0d0

Apply Changes

**Content**

Text: 000000

Apply Changes

**Banner#2**

Enabled: 0  
Text: Some Text

Apply Changes

**Banner#2Extra1**

Enabled: 0  
Text: Some long text entry

Apply Changes

You took it all too far and now it makes you feel sick, click below to reset.

**Factory Reset**

Pi-Star / Pi-Star Dashboard (with color scheme) (M2) 2016-2018.  
ircDDBGateway Dashboard by Huxel, Berlin (D3D1).  
MMDVMDash developed by Kim Huxel (DQ5VH).  
Need help? Click here for the Support Group.  
Get your copy of Pi-Star from here.

Changed your mind? Click "Factory Reset" from the CSS tool page to restore the default color scheme. Not to worry – it affects this page only, other ZUMspot programming remains unchanged. Don't forget to back up.

# That's it !

For now anyway, Thanks.  
Please contact me at the address below with  
questions and comments, corrections, etc.

Dave Hull, KC6N  
dhull1@san.rr.com

# Revision List:

- 01/20/2018: Original Release presented at the PAPA San Diego Luncheon Sat Jan 20 2018
- 03/27/2018: Extensive rework incorporating suggestions received since original release
- 04/03/2018: Added Appendix J, a page on Etcher, and this revision list.
- 05/12/2018: Updated Appendix E to include SSH update/upgrade methodology. Complete re-write of Appendix H to address cross-mode Fusion to P25 and NXDN. Added some setup info for NXDN and P25 to part IV. Made cosmetic edits to quite a few pages (mostly for clarity).
- 06/02/2018: Added Appendix K, Customizing Pi-Star Colors, Completely rewrote Appendix H to cover the cross mode options included as part of 3.4.15. Does not cover cross mode with DMR Gateway. (second release, 06/05/2018) fixed a couple typos. 06/07/2018 typo in Pi-Version #.