

VKDMMR

Hotspot

Setup

Guide

By Michael Lanagan VK4MWL
Brisbane Amateur Radio Club VK4BA

Version	Date	Changes	Change Author
0.5	10/10/2020	Initial Release for Review	Michael Lanagan
0.6	11/10/2020	Updated Dashboard webservers to reflect new servers Added the DMR+ Network String Added update of the password Added configuration backup	Michael Lanagan
1.0	14/10/2020	Added Title Page Added Contents Added Pi-Star update section Added BER section Added Backup of configuration Updated radio setup to use low power	Michael Lanagan

Contents

Introduction.....	3
What is a Hotspot?	3
DMR Dashboards	3
DMR ID	3
Hotspot Frequency	4
Hotspot Talk Groups.....	4
Hotspot Hardware.....	4
Raspberry Pi Zero W.....	5
MMDVM.....	5
Hardware Construction	6
Pi-Star - Software	8
Setting up the MicroSD Card.....	8
WiFi Configuration	12
Pi-Star Configuration.....	16
Pi-Star Updates	18
Radio Configuration.....	19
Bit Error Rate (BER)	20
VKDMR Configuration Page Example	21

Introduction

This document is intended to be a simple setup guide to get your Simplex Hotspot up and working on the VKDMR network.

To keep the guide as simple as possible I have omitted the more complicated setup options and additional digital modes that can be setup on the Hotspot. These can be addressed in a further guide.

It is assumed that you already have a DMR radio that can connect and communicate on one of the VKDMR repeaters and you have the capability to program additional channels and talk groups into your DMR radio.

What is a Hotspot?

A Hotspot is like a mini repeater with a limited range due to the low power output of approximately 10mW. Your handheld connects to the Hotspot using RF and then the hotspot connects to the dashboard over the internet.

A hotspot is useful for areas that don't have easy access to the local DMR repeater.

DMR Dashboards

There are two VKDMR dashboards, one for public repeaters (<http://rpt2.vkdmr.com/>) and another one for Hotspots (<http://hot2.vkdmr.com/>). Once your Hotspot is setup correctly it will show up on the Hotspot dashboard against your callsign - see below.

182	VK4MU1	Brisbane (30)	5050180			505				MMDVM
183	VK4MWL	Brisbane, QG62nk (30)	505129101 5			505 3804				MMDVM
184	VK4MDD	Nahrunda Qld	5050313	5 3800 8/6		505 3804				MMDVM

DMR ID

This document assumes that you already have a working DMR radio and DMR ID.

The Hotspot will use your existing DMR Radio ID. See below extract from the Radio ID FAQ page.

*"Hotspots: **** MMDVM, DV4MINI, openSPOT, DVMEGA, and all other hotspot type devices do NOT require a separate ID, use an existing ID only, check the hotspot tab on your account dashboard, do NOT request an ID for them *****

If you own more than one hotspot, use your personal ID number and add a 2 digit suffix, example: Radio ID 3020111, use 302011101, 302011102, ect.

NEVER operate multiple hotspot within range of each other on the same frequency even with different ID's. This will create serious network issues in most cases.

Hotspots do not require repeater ID's." - Reference - <https://www.radioid.net/faq#/>

If you are not sure of you DMR ID you can look it up at <https://database.radioid.net/database/search#/>

Hotspot Frequency

There are two frequencies allocated in the 70cm Band for Internet Gateways (Reference "WIA Amateur Band Plans"). Choose one of these frequencies.

439.125MHz & 439.150MHz

Hotspot Talk Groups

The Hotspot only "listens" to certain talk groups that you configure in the configuration webpage.

As a starting point I suggest configuring the following talk groups: -

- 5 - time slot 1/all repeaters
- 505 - time slot 2/all VK repeaters
- 3084 - time slot 2/all QLD repeaters

The following option string is added to the DMR configuration on the configuration web page that is explained later in the document.

StartRef=4000;RelinkTime=15;UserLink=1;TS2_1=505;TS2_2=3804;TS1_1=5

Up to 5 talk groups can be configured using this option string.

Hotspot Hardware

There are several different Hotspots on the market. This document covers the Jumbospot MMDVM Hotspot which uses the following components.

1. Raspberry Pi Zero W (Single Board Computer that runs Linux)
2. Jumbospot MMDVM board (Multi Mode Digital Voice Modem - UHF Radio Board)
3. OLED Display (Usually supplied with the MMDVM board)
4. Metal Case
5. UHF Antenna
6. Micro USB Power Supply
7. 16GB MicroSD memory card
8. Dual row header pins

These parts can be sourced separately or purchased as a kit.

VKDirect has kits available (<https://vkdirect.com.au/index.php?route=product/category&path=64>) this is not the cheapest place to purchase, however they are all constructed and tested by VK4NGA (<https://www.facebook.com/vk4nga/>) who is based on the Sunshine Coast. (I have no connection with VK4NGA and I have not purchased anything from him)

Other options are: -

- <https://qslcomms.com.au>
- Aliexpress
- eBay
- <https://core-electronics.com.au/> (Raspberry Pi, Power Supply, SD Card)

Raspberry Pi Zero W

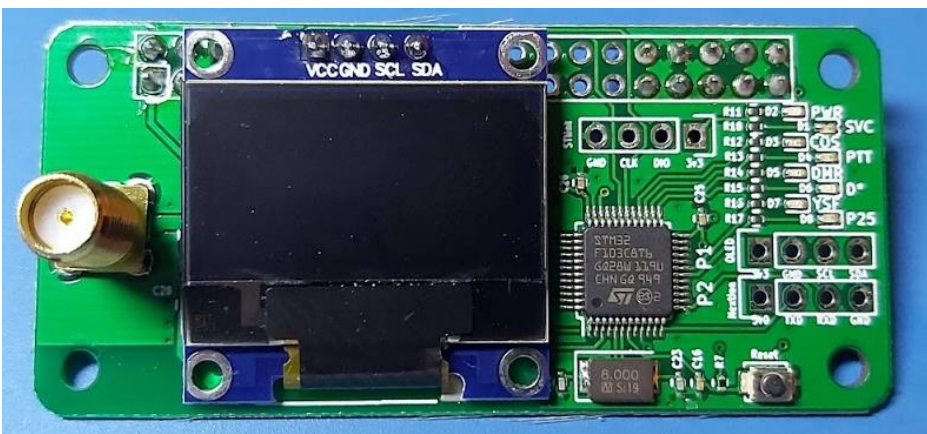


There are two versions of the Raspberry Pi Zero W and Raspberry Pi Zero WH. The “W” version does not come with headers and the “WH” version includes headers pre-soldered.

If you get the one with headers already soldered as shown in the photo here you will need snip pins 12,14,16,18 so they do not interfere with the pins from the OLED display.

The MMDVM boards come with 2 sets of 2x5 header pins that can be soldered to the Raspberry Pi, so if you can solder in the pins, I recommend that you buy the Raspberry Pi Zero W as it is cheaper.

MMDVM



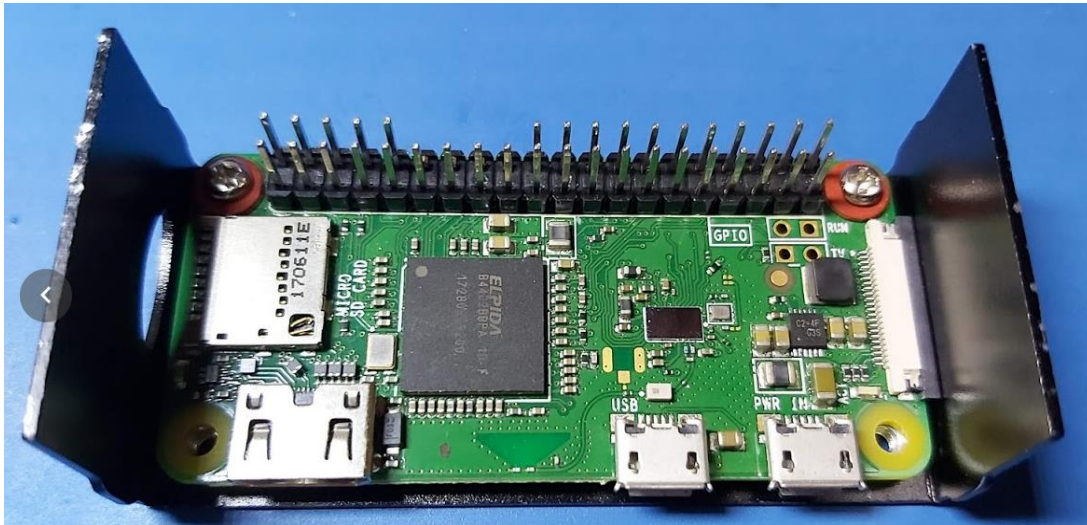
This board provides the RF interface between the Raspberry Pi and your DMR radio.

Hardware Construction

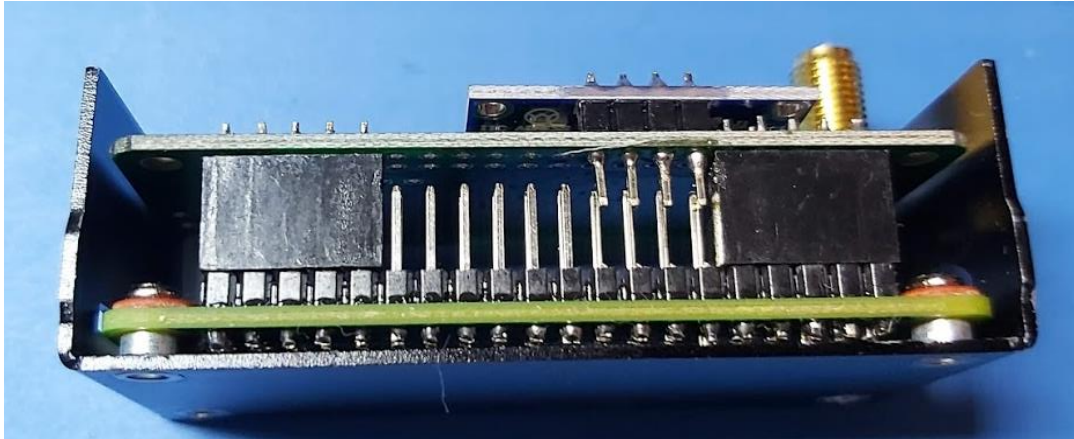
1. Solder the 2 sets of 2x5 header pins to the component side of the Raspberry Pi Zero W as required
2. Separate the 2 case pieces. Note that one end has an oval hole this must line up with the SDCard slot of the Raspberry Pi



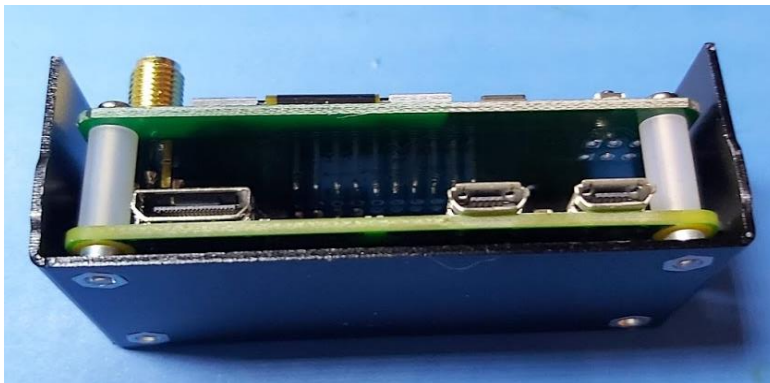
3. Install the Raspberry Pi into the lower case using the 2 short screws next to the header pins. Note the SD Card Slot is on the left in the photo.



4. Install the MMDVM Board by plugging it into the Raspberry Pi. Note that the pins from the OLED are not touching any of the pins on the Raspberry Pi.



5. Use a pair of long nose pliers or tweezers to hold the two plastic spacers while installing the 2 long screws.



6. Align the SMA connector on top of the MMDVM board with the top part of the case and clip the case into place. Note the case should easily clear the connectors on the Raspberry Pi, if it doesn't check that the Raspberry Pi is installed in the correct orientation with the oval hole on the SD Card side of the Raspberry Pi.



7. Screw on the antenna. Don't install the SD Card Yet as we need to install the software onto it.

Pi-Star - Software

Pi-Star is the operating system that runs on the Raspberry Pi Zero W, it is a modified linux build that is specifically setup with a number of applications and a configuration webpage.

The Raspberry Pi Zero W connects to the DMR network via your home wireless internet.

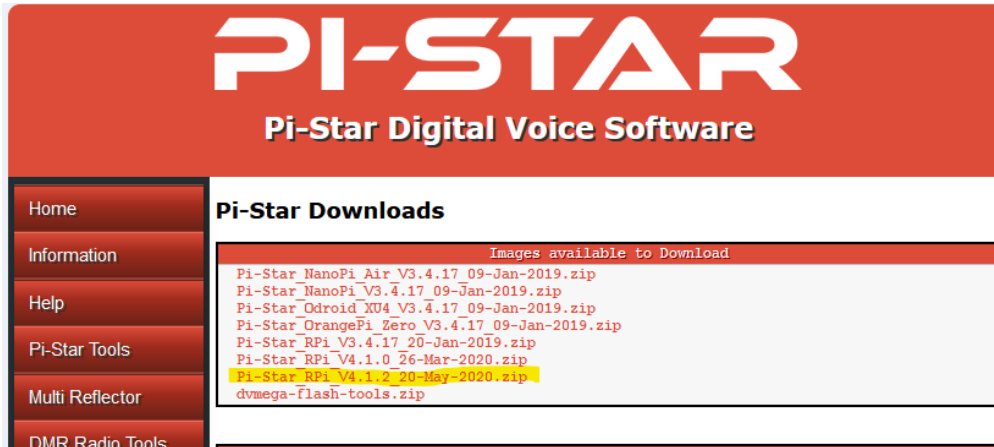
Pi-Star needs to be installed onto the SD Card which is then inserted into the Raspberry Pi.

You will need a USB MicroSD Card reader to complete the next task. The below one is made by Kingston.



Setting up the MicroSD Card

1. Download the latest version for Pi-Star “[Pi-Star RPi_V4.1.2_20-May-2020.zip](#)” at the time of writing.

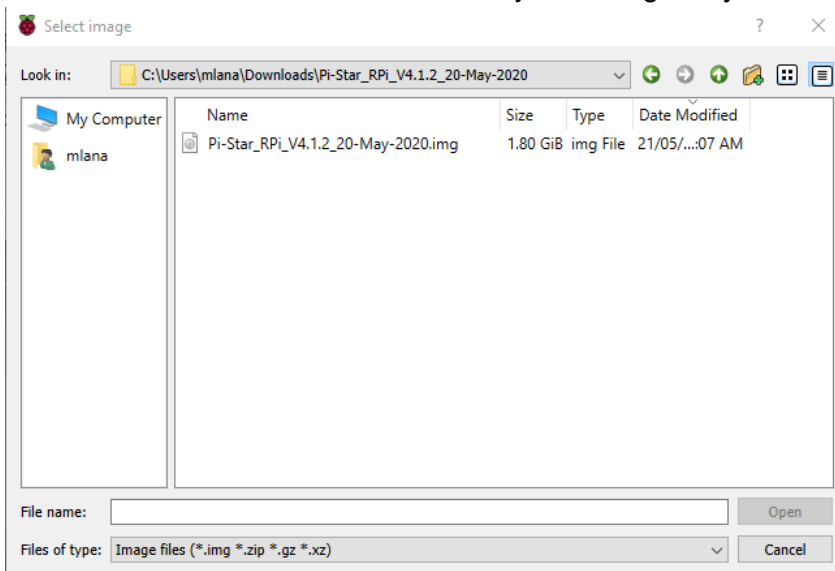


2. Unzip the Pi-Star_RPi_V4.1.2_20-May-2020.zip file. Take note of the location of the “Pi-Star_RPi_V4.1.2_20-May-2020.img” file
3. Download “Raspberry Pi Imager for Windows” from <https://www.raspberrypi.org/downloads/>

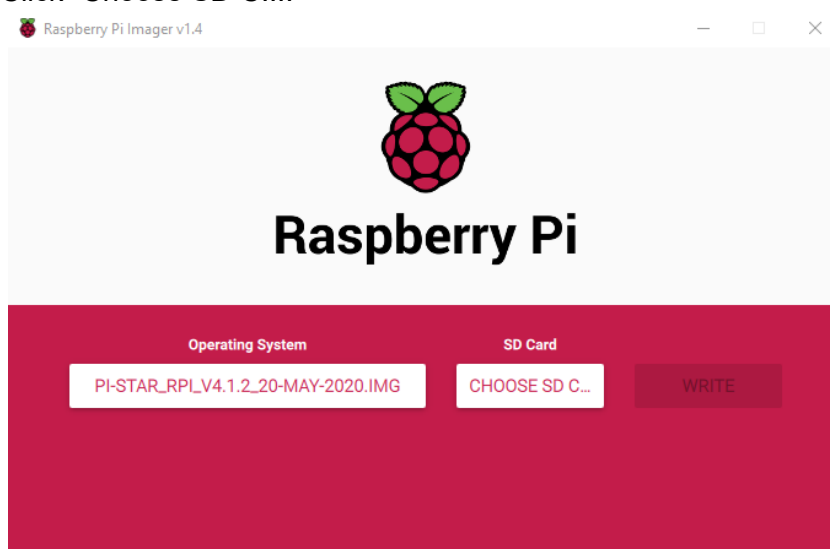
4. Install the “Raspberry Pi Imager for Windows” application and run it.



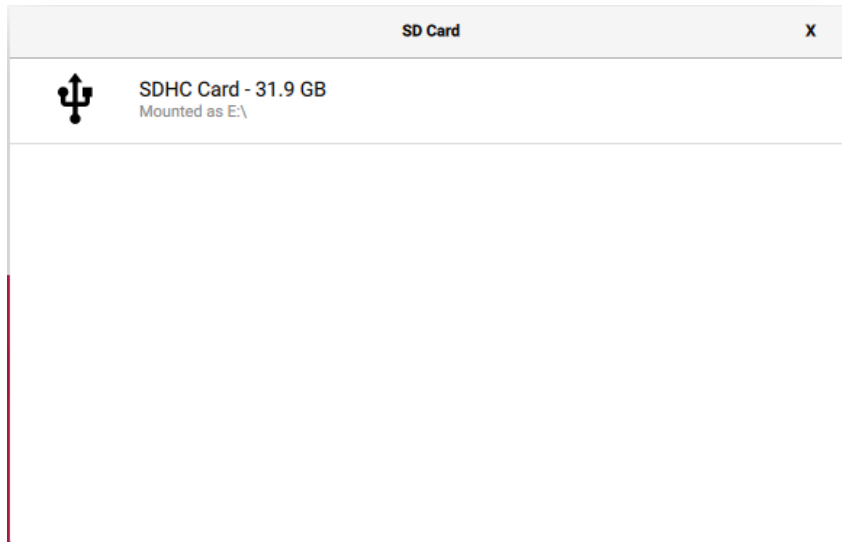
5. Click on “Choose OS”, scroll to the bottom and select “Use custom”
6. Locate the “Pi-Star_RPi_V4.1.2_20-May-2020.img” file you extracted in step 2 and select it.



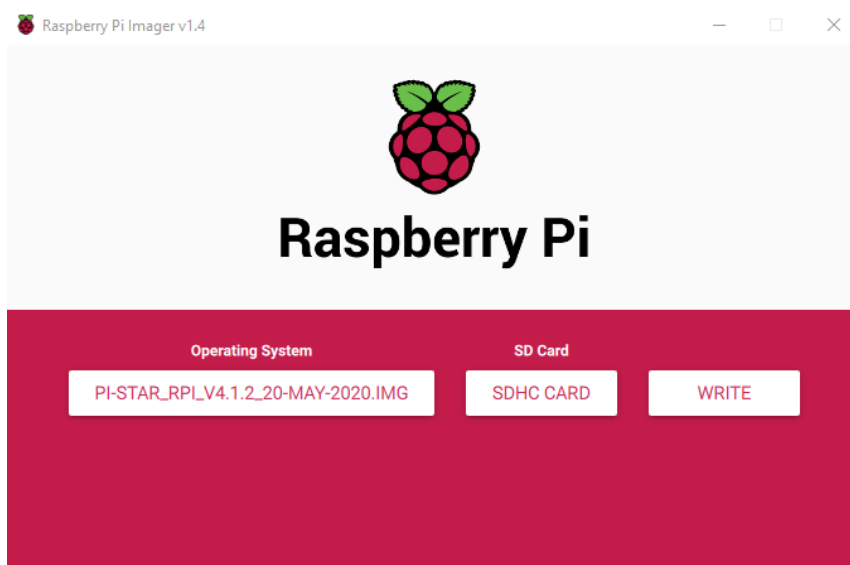
7. Plug the MicroSD Card into the card reader and plug the card reader into the computer
8. Click “Choose SD C....”



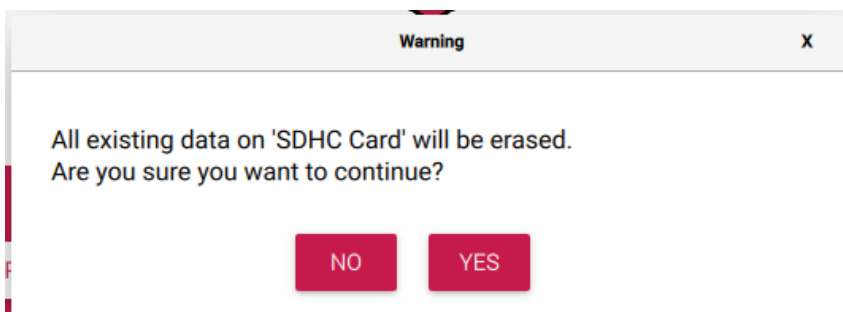
9. Select the SD Card.



10. Click "WRITE"



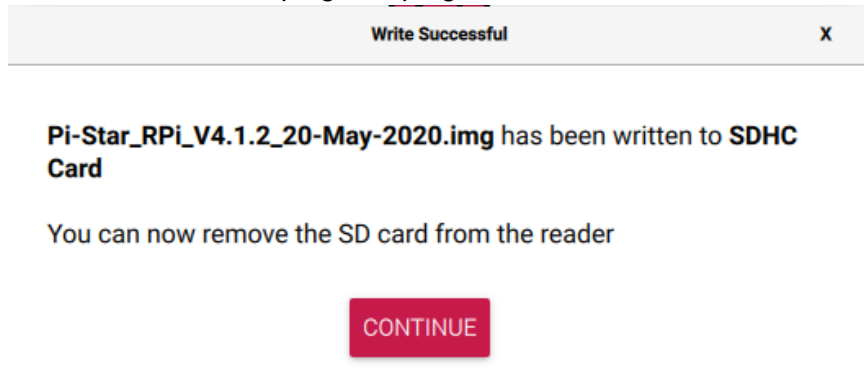
11. Click "YES"



12. Wait until the image is finished writing and verifying to the MicroSD Card

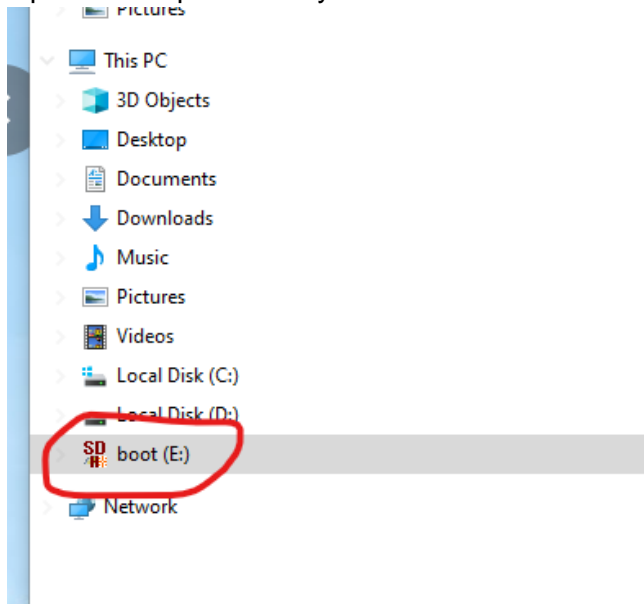


13. Click continue and unplug and plug the SD Card reader from the computer

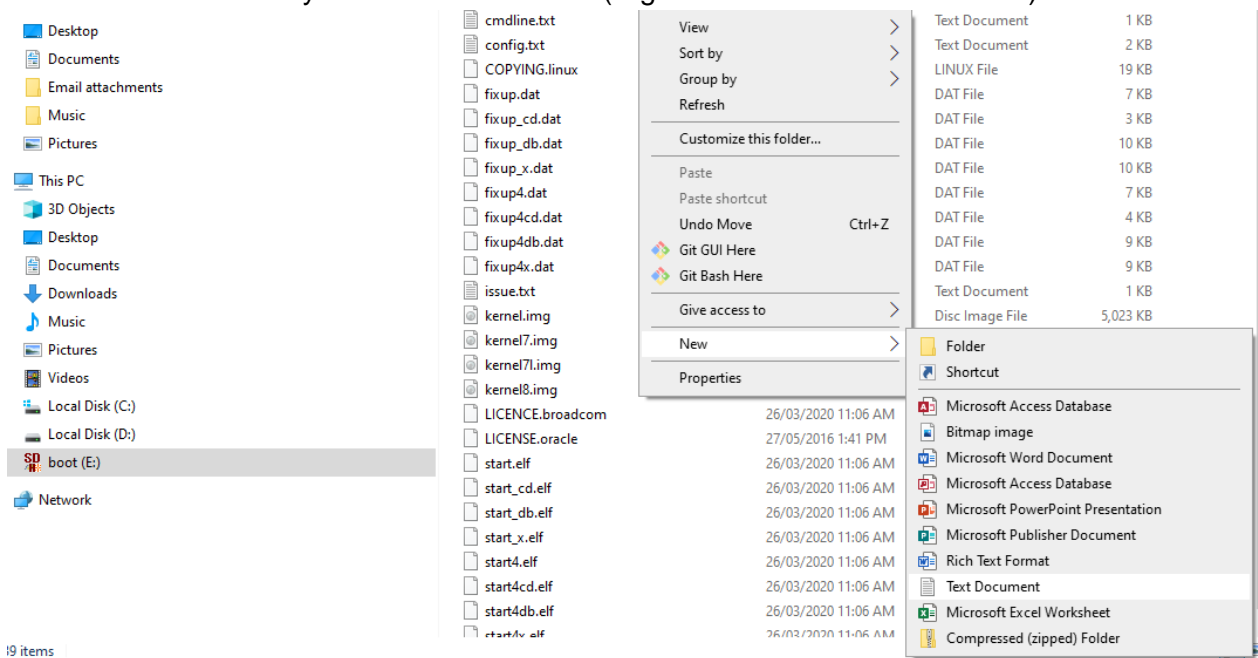


WiFi Configuration

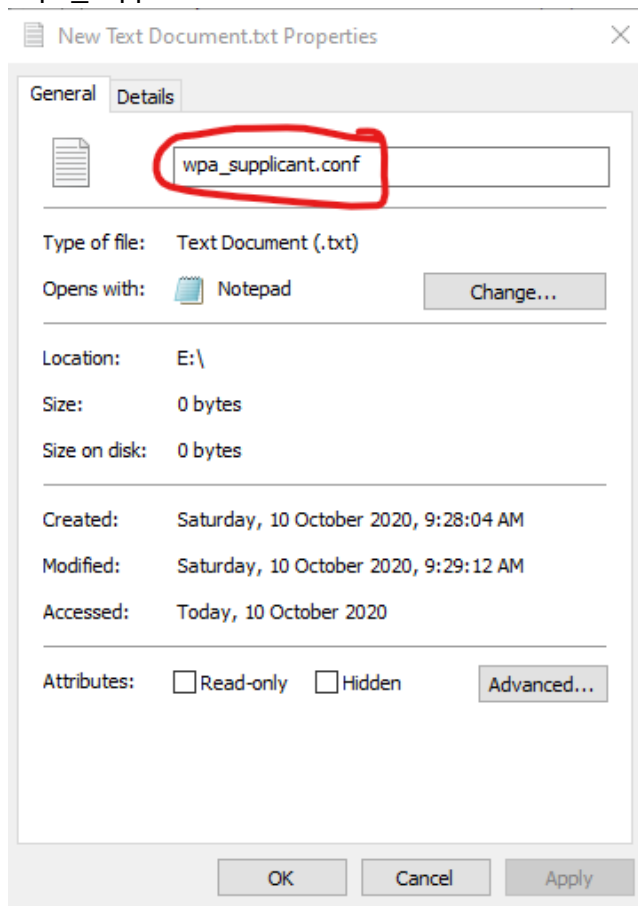
1. Insert the MicroSD card into the card reader and connect to the USB port of the computer
2. Open File Explorer and you should see a new drive letter



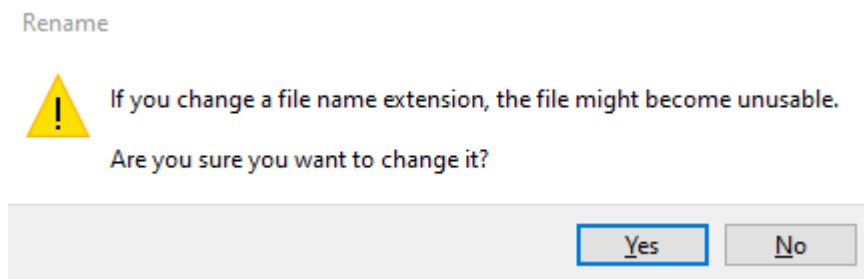
3. Within the root directory create a new text file (Right click New>Text Document)



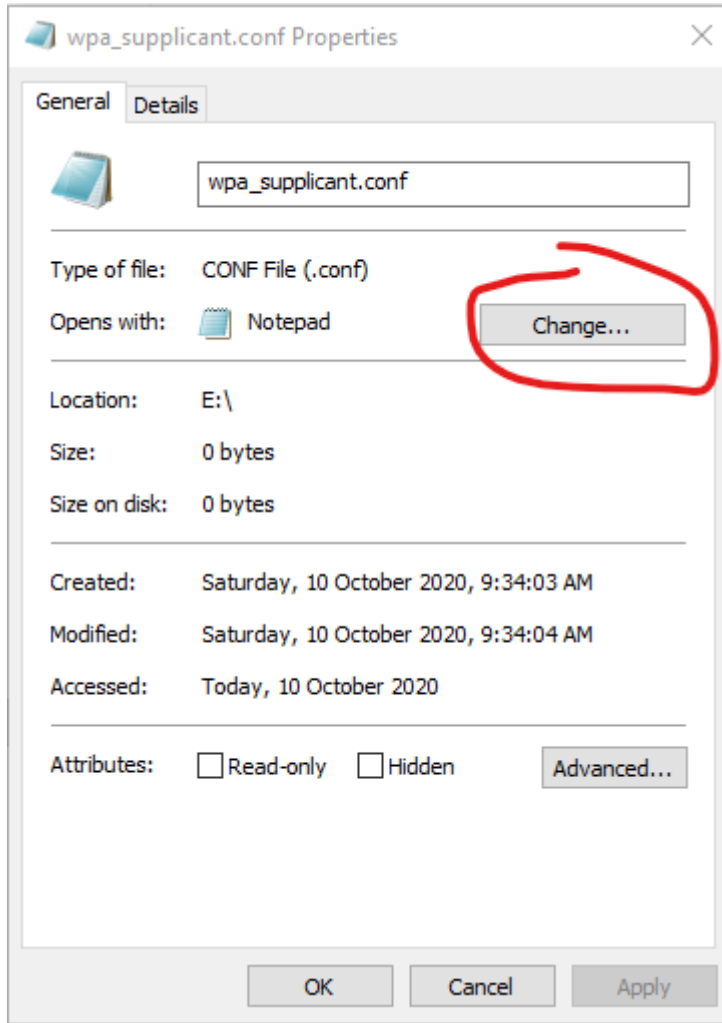
4. Right click on the new file and select properties. Change the name of the file to "wpa_supplicant.conf" and click "OK"



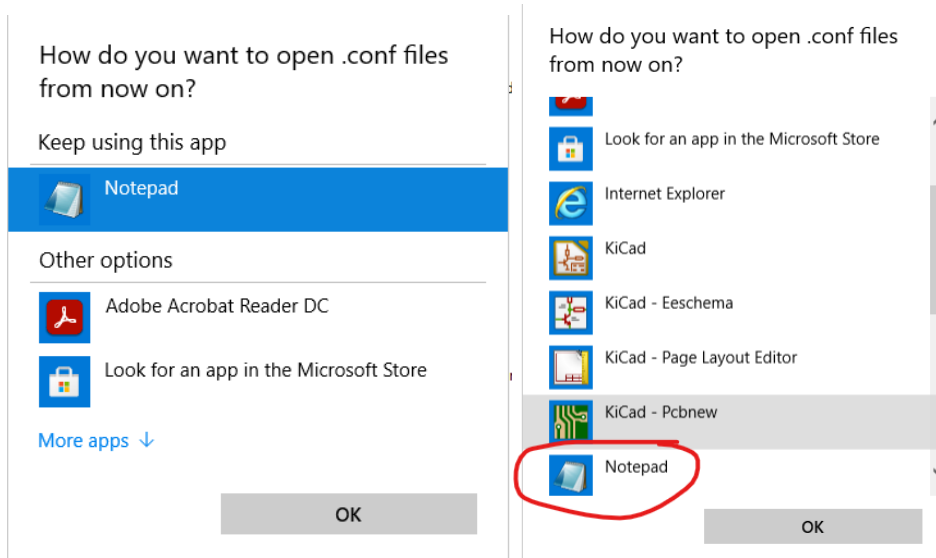
5. Click "Yes" to the warning message



6. Right click on the “wpa_supplicant.conf” file and select “Properties”
7. Click “Change”



8. Click “More Apps” and select notepad

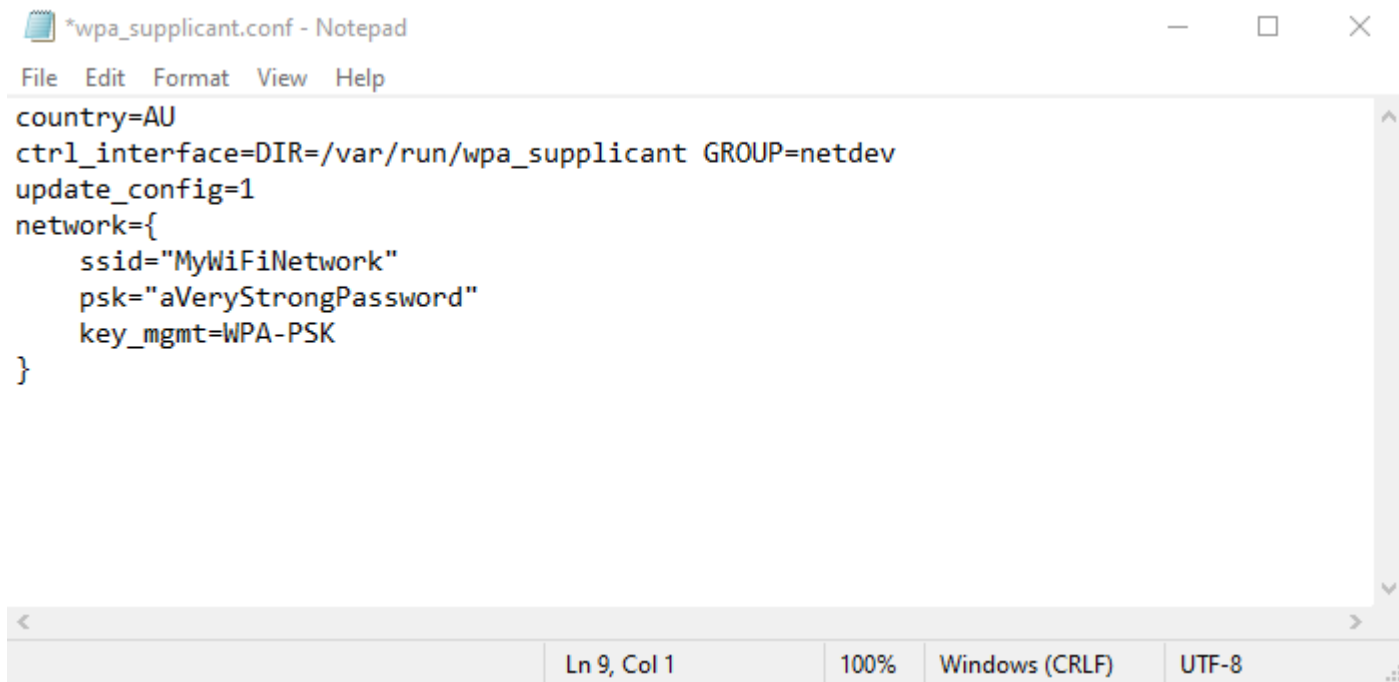


9. Double click on the “wpa_supplicant.conf” file to open it in Notepad

10. Cut and paste in the following text into the Notepad window

```
country=AU
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1
network={
    ssid="MyWiFiNetwork"
    psk="aVeryStrongPassword"
    key_mgmt=WPA-PSK
}
```

11. It should look like this after step 10

A screenshot of a Notepad window titled '*wpa_supplicant.conf - Notepad'. The window has a menu bar with 'File', 'Edit', 'Format', 'View', and 'Help'. The text inside the window is the same as in step 10. The status bar at the bottom shows 'Ln 9, Col 1', '100%', 'Windows (CRLF)', and 'UTF-8'.

```
*wpa_supplicant.conf - Notepad
File Edit Format View Help
country=AU
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1
network={
    ssid="MyWiFiNetwork"
    psk="aVeryStrongPassword"
    key_mgmt=WPA-PSK
}
Ln 9, Col 1 100% Windows (CRLF) UTF-8
```

12. Replace the string MyWiFiNetwork with your home WiFi SSID

13. Replace the string aVeryStrongPassword with you home WiFi password

14. Close Notepad and click Save to save the file

15. Remove the MicroSD card from the reader and install it into the Raspberry Pi. It will be almost flush with the case when installed correctly.



16. Plugin the power to the Raspberry Pi and turn it on

Pi-Star Configuration

1. The Raspberry Pi takes approximately 5 minutes to boot after power on
2. Once booted you should be able to click on this link <http://pi-star/admin/> and you will be prompted for a username and password
3. Enter the user name : pi-star and password : raspberry
4. Click on Configuration in the top left corner

Hostname: pi-star Pi-Star: 4.1.2 / Dashboard: 20200520

Pi-Star Digital Voice Dashboard for M1ABC

Dashboard | Admin | Live Logs | Power | Updates | **Configuration**

Gateway Hardware Information					
Hostname	Kernel	Platform	CPU Load	CPU Temp	
pi-star	4.19.97+	Pi Zero W Rev 1.1 (512MB)	2.72 / 1.51 / 0.6	43.3°C / 109.9°F	

Service Status					
MMDVMHost	DMRGateway	YSFGateway	YSFPParrot	P25Gateway	P25Parrot
DStarRepeater	ircDDBGateway	TimeServer	PiStar-Watchdog	PiStar-Remote	PiStar-Keeper

No Mode Defined...

I don't know what mode I am in, you probably 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/pistarusergroup/> or the Support forum here: <https://forum.pistar.uk/>

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2020.
 ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),
 MMDVMDash developed by Kim Huebel (DG9VH),
 Need help? Click here for the Facebook Group
 or Click here to join the Support Forum
 Get your copy of Pi-Star from here.

5. Configure the Control Software section as below and click “Apply Changes”

Control Software	
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](#)

6. Configure the General Configuration section as below and click “Apply Changes” (**note it takes a little while for the page to refresh and restart the services before you can continue**)
 - a. Callsign
 - b. Frequency (439.125MHz or 439.150MHz)
 - c. Your Latitude, Longitude, Town, Grid Location
(Find your Coordinates and Grid with this website <https://www.qrz.com/gridmapper>)
 - d. Change URL to “Auto”
 - e. Change the Radio/Modem Type to “STM32-DVM / MMDVM_HS - Raspberry Pi Hat (GPIO)”
 - f. Change the APRS host to “queensland.aprs2.net”
 - g. Change the timezone to “Australia/Brisbane”
7. After applying the configuration the services will restart and you will now see the MMDVMHost Configuration section. Update the below settings and apply changes.
 - a. Turn on “DMR Mode”
 - b. Change the MMDVM Display to “OLED Type 3”
8. After applying the changes there will be a new option in the General Configuration section, “CCS7/DMR ID:” enter you DMR ID and apply changes

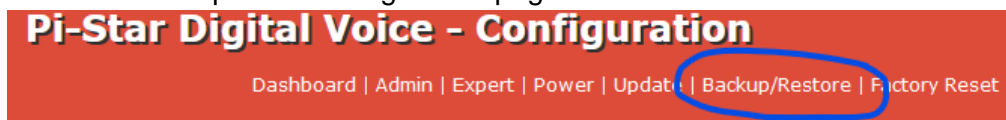
9. After the services restart configure the following options in the “DMR Configuration” section and apply changes.
 - a. DMR Master “DMR+_IPSC2-VKHOTSPOT”
 - b. Add the following string to DMR+ Network
 “StartRef=4000;RelinkTime=15;UserLink=1;TS2_1=505;TS2_2=3804;TS1_1=5”
 - c. DMR ESSID: - change the drop down to “01”
10. Open the VKDMR Hotspot Dashboard <http://hot2.vkdmr.com/> and search for your callsign you should see some like this

182	VK4MU1	Brisbane (SU)	5050180	505	MMDVM
183	VK4MWL	Brisbane, QG62nk (30)	505129101 5	505 3804	MMDVM
184	VK4MDD	Nahrunda Qld	5050212	505 3804	MMDVM

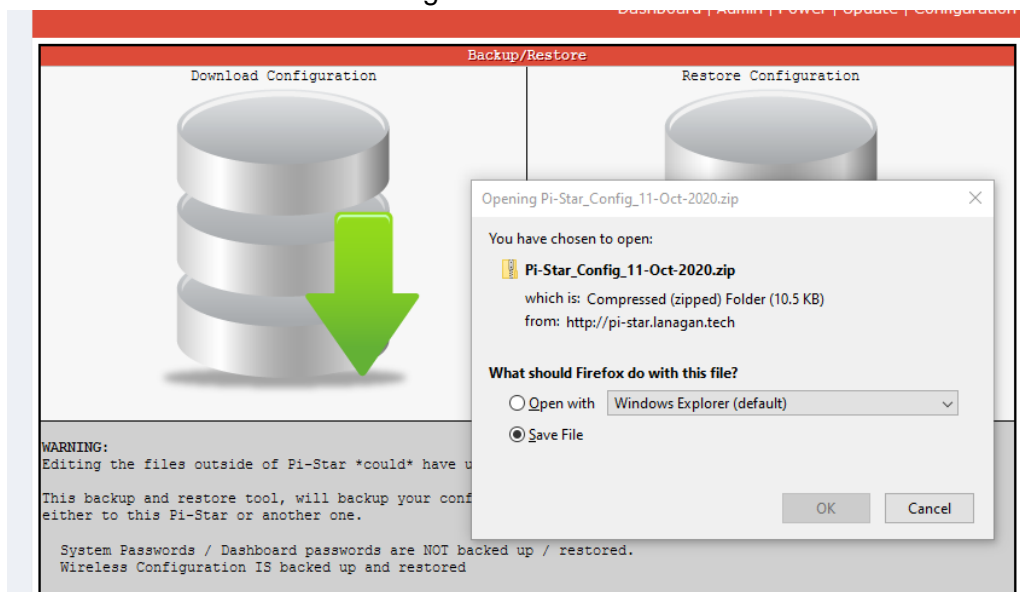
11. Update the admin password on your Pi-Star

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	

12. Create a back of the configuration
 - a. At the top of the configuration page click



- b. Click on Download Configuration and save the file to a safe location



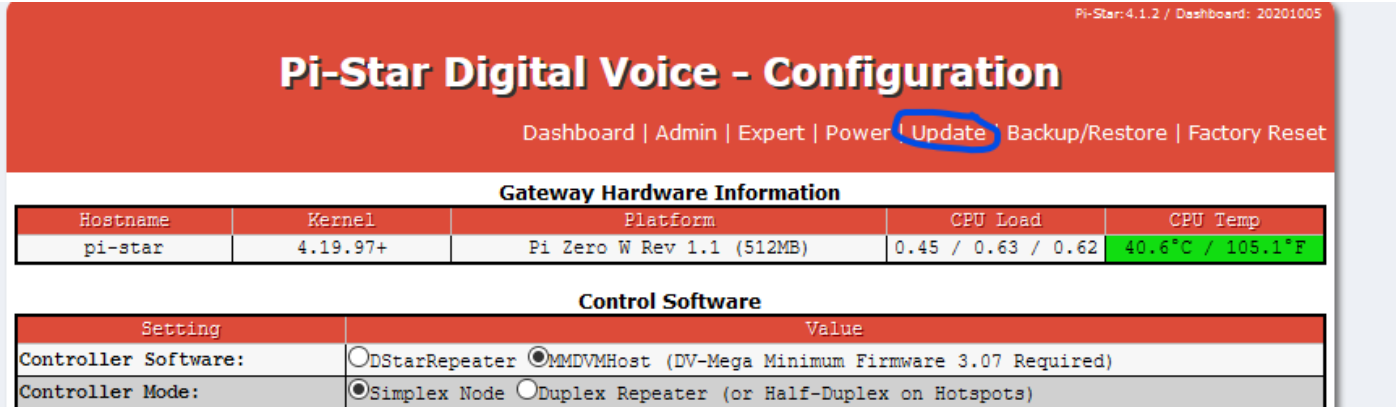
13. Complete a Pi-Star Update described below.

Pi-Star Updates

From time to time you will need to complete an update on the Pi-Star.

The update will update various operating system and Pi-Star application components.

1. Navigate to <http://pi-star/admin/configure.php> and enter your user “pi-star” and password
2. Click on Update

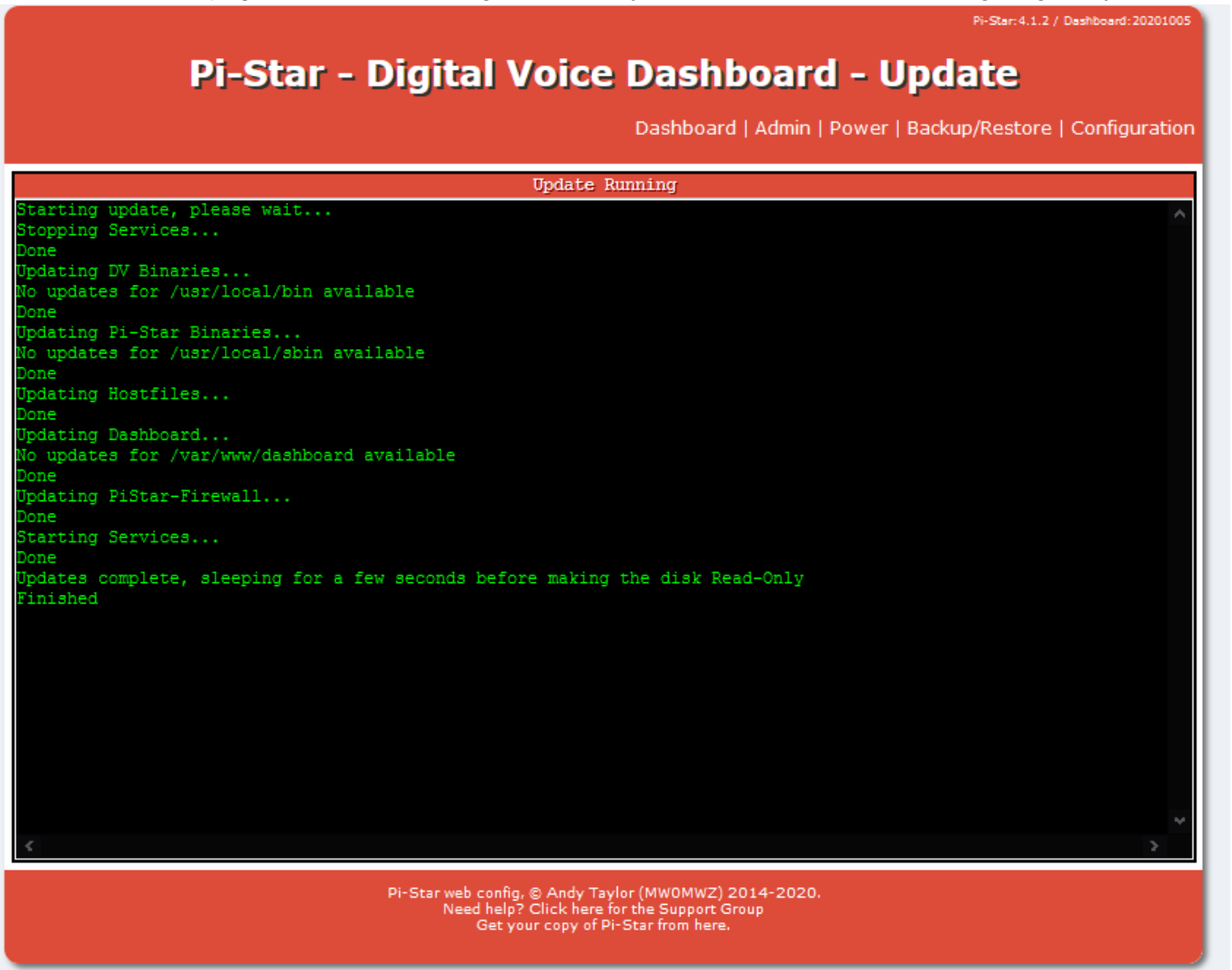


The screenshot shows the 'Pi-Star Digital Voice - Configuration' dashboard. At the top right, it says 'Pi-Star: 4.1.2 / Dashboard: 20201005'. The main title is 'Pi-Star Digital Voice - Configuration'. Below the title is a navigation bar with links: 'Dashboard | Admin | Expert | Power | Update | Backup/Restore | Factory Reset'. The 'Update' link is highlighted with a blue circle. The dashboard contains two tables. The first table is 'Gateway Hardware Information' with columns: Hostname, Kernel, Platform, CPU Load, and CPU Temp. The second table is 'Control Software' with columns: Setting and Value.

Gateway Hardware Information				
Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	4.19.97+	Pi Zero W Rev 1.1 (512MB)	0.45 / 0.63 / 0.62	40.6°C / 105.1°F

Control Software	
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)

3. You will see a page like the below image, wait until you see “Finished” before navigating away.



The screenshot shows the 'Pi-Star - Digital Voice Dashboard - Update' page. At the top right, it says 'Pi-Star: 4.1.2 / Dashboard: 20201005'. The main title is 'Pi-Star - Digital Voice Dashboard - Update'. Below the title is a navigation bar with links: 'Dashboard | Admin | Power | Backup/Restore | Configuration'. The 'Update Running' section is highlighted with a red header. The update progress is shown in a terminal window with green text on a black background. The footer contains copyright information and a link to the support group.

```
Starting update, please wait...
Stopping Services...
Done
Updating DV Binaries...
No updates for /usr/local/bin available
Done
Updating Pi-Star Binaries...
No updates for /usr/local/sbin available
Done
Updating Hostfiles...
Done
Updating Dashboard...
No updates for /var/www/dashboard available
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 (MW0MWWZ) 2014-2020.
Need help? Click here for the Support Group
Get your copy of Pi-Star from here.

Radio Configuration

You will need to configure an additional channel and associated talkgroups in your codeplug and download to the DMR radio. This new channel will use the TX/ RX Frequency that you configured on the Hotspot configuration page. (439.125MHz or 439.150MHz)

Important : Set you radio to low power before transmitting on your Hotspot frequency as they are usually close by and can be overdriven by high power causing intermodulation or potentially damage to your Hotspot.

Once this is configured select your hotspot channel and TalkGroup 9990 (Parrot) and do a test transmission.

You should see information light up on the display of the hotspot and hear your voice back from the parrot.

You will also see info in the Hotspot Dashboard while you are transmitting.

180	VK4MOT	Brisbane (27)	5050180			505 3804			MMDVM
181	VK4MWL	Brisbane, QG62nk (29)	505129101 5	CQ		505 3804	9990/ECHO (5051291) VK4MWL		MMDVM
182	VK4NRD	Nahrunda Qld QG63ht	5050312	5 3809 8/6		505 3804			MMDVM

Bit Error Rate (BER)

DMR is digital radio and encodes your voice as ones and zeros over RF. Bit Error Rate or BER is the ratio of bit errors to total bits sent.

High BER indicates that the Hotspot (or any repeater) is not receiving your signal correctly.

In the case of Hotspots they use cheap transmitter chips and sometimes need a frequency offset to be setup to correct high BER.

To see the BER of your transmissions access the Pi-Star dashboard <http://pi-star/> and look for your call sign in the “Local RF Activity” section. (You may need to do a test transmission to the parrot to generate a log entry)

Pi-Star Digital Voice Dashboard for VK4MWL									
Dashboard Admin Configuration									
Modes Enabled		Gateway Activity							
D-Star	DMR	Time (AEST)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER
YSF	P25	20:57:48 Oct 14th	DMR Slot 2	VK4MWL	TG 9990	Net	4.1	4%	0.1%
YSF XMode	NXDN	20:57:43 Oct 14th	DMR Slot 2	VK4MWL	TG 9990	RF	4.0	0%	1.4%
DMR XMode	POCSAG	20:57:32 Oct 14th	DMR Slot 2	4000	TG 9	Net	2.3	0%	0.0%
Network Status		20:44:11 Oct 14th	DMR Slot 2	VK2FTKP	TG 505	Net	1.6	0%	0.0%
D-Star Net	DMR Net	20:33:20 Oct 14th	DMR Slot 2	VK2CJC	TG 505	Net	7.0	0%	0.0%
YSF Net	P25 Net	20:17:00 Oct 14th	DMR Slot 2	VK4AU	TG 505	Net	1.9	3%	0.0%
YSF2DMR	NXDN Net	19:36:20 Oct 14th	DMR Slot 2	VK4LIP	TG 505	Net	6.6	0%	0.0%
YSF2NXDN	YSF2P25	19:29:33 Oct 14th	DMR Slot 2	VK2FJ	TG 505	Net	4.4	0%	0.0%
DMR2NXDN	DMR2YSF	19:15:06 Oct 14th	DMR Slot 2	VK3PMR	TG 505	Net	1.6	0%	0.0%
Radio Info		19:07:38 Oct 14th	DMR Slot 2	VK2NAT	TG 505	Net	5.5	0%	0.0%
Trx	Listening DMR	18:59:17 Oct 14th	DMR Slot 2	VK6KBY	TG 505	Net	4.8	5%	0.0%
Tx	439.150000 MHz	18:54:42 Oct 14th	DMR Slot 2	VK2INX	TG 505	Net	0.8	0%	0.0%
Rx	439.150000 MHz	Local RF Activity							
FW	HS_Hat:v1.4.17	Time (AEST)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI
TCXO	14.7456 MHz	20:57:43 Oct 14th	DMR Slot 2	VK4MWL	TG 9990	RF	4.0	1.4%	S9+46dB (-47 dBm)

If you are experiencing higher than 1% BER you can adjust the frequency offsets in the expert configuration pages.

1. Leave the Dashboard open and open another browser tab or window using this link http://pi-star/admin/expert/edit_mmdvmhost.php
2. Scroll down the page to the “Modem” section and locate “RXOffset”
3. Adjust the offsets in +/-100 step offsets and test using the TG 9990 parrot
4. Monitor the BER in the dashboard and adjusting in increments of +/-50 the +/-10 to reduce the BER below 1%

Further info about this process can be found on the webpage <https://amateurradionotes.com/pi-star-notes.htm#tuningber> by Toshen, KE0FHS.

VKDMR Configuration Page Example

This is a copy of my configuration for reference.

Pi-Star: 4.1.2 / Dashboard: 20200813

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	4.19.97+	Pi Zero W Rev 1.1 (512MB)	0.01 / 0.28 / 0.56	40.1°C / 104.2°F

Control Software

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

MMDVMHost Configuration

Setting	Value
DMR Mode:	<input checked="" type="radio"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
P25 Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	<input type="radio"/>
YSF2NXDN:	<input type="radio"/>
YSF2P25:	<input type="radio"/>
DMR2YSF:	<input type="radio"/> Uses 7 prefix on DMRGateway
DMR2NXDN:	<input type="radio"/> Uses 7 prefix on DMRGateway
POCSAG:	<input type="radio"/> POCSAG Paging Features
MMDVM Display Type:	OLED Type 3 Port: /dev/ttyAMA0 Nextion Layout: ON7LDS L3 HS

Apply Changes

General Configuration

Setting	Value
Hostname:	pi-star <input type="checkbox"/> Do not add suffixes such as .local
Node Callsign:	VK4MWL
CCS7/DMR ID:	
Radio Frequency:	439.150.000 MHz
Latitude:	degrees (positive value for North, negative for South)
Longitude:	degrees (positive value for East, negative for West)
Town:	Brisbane, QG62nk
Country:	Australia
URL:	http://www.qrz.com/db/VK4MWL <input checked="" type="radio"/> Auto <input type="radio"/> Manual
Radio/Modem Type:	STM32-DVM / MMDVM_HS - Raspberry Pi Hat (GPIO)
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
APRS Host:	queensland.aprs2.net
System Time Zone:	Australia/Brisbane
Dashboard Language:	english_uk

Apply Changes

DMR Configuration

Setting	Value
DMR Master:	DMR+_IPSC2-VKHOTSPOT
DMR+ Network:	Options=StartRef=4000;RelinkTime=15;UserLink=1;TS2_1=505;TS2_2=3804;TS1_1
DMR ESSID:	01
DMR Colour Code:	1
DMR EmbeddedLOnly:	<input type="radio"/>
DMR DumpTAData:	<input checked="" type="radio"/>

Apply Changes

Setting	Value
MobileGPS Enable:	<input type="checkbox"/>
GPS Port:	/dev/ttyACM0
GPS Port Speed:	38400

Apply Changes

Firewall Configuration

Setting	Value
Dashboard Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
ircDDBGateway 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
uPNP:	<input checked="" type="radio"/> On <input type="radio"/> Off

Apply Changes

Wireless Configuration

Refresh
Reset Wifi Adapter
Configure Wifi

Wireless Information and Statistics

Interface Information	Wireless Information
Interface Name : wlan0	Connected To : XXXXXXXXXX
Interface Status : Interface is up	AP Mac Address : e0:63:da:65:c5:f7
IP Address : 192.168.2.180	Bitrate : 65.0 MBit/s
Subnet Mask : 255.255.255.0	Signal Level : -53 dBm
Mac Address : b8:27:eb:9e:0e:1f	Transmit Power : 31 dBm
Received Packets : 343526	Link Quality : 81 %
Received Bytes : 85195852 (81.2 MiB)	Channel Info : 2.4GHz Ch11 (2.462 GHz)
Transferred Packets : 315345	WiFi Country : AU
Transferred Bytes : 181583242 (173.1 MiB)	

Information provided by ifconfig and iwconfig

Remote Access Password

User Name	Password
pi-star	Password: <input type="password"/> Confirm Password: <input type="password"/> Set Password
WARNING: This changes the password for this admin page AND the "pi-star" SSH account	

Pi-Star web config, © Andy Taylor (MW0MWZ) 2014-2020.
Need help? Click here for the Support Group
Get your copy of Pi-Star from here.

Further Reading

<https://www.pistar.uk/>

<https://forum.pistar.uk/>

<https://amateurradionotes.com/pi-star.htm#learningpistar>

<http://www.lyonscomputer.com.au/> (Lots of info on lots of stuff including DMR. Thanks Glenn VK4PK)