

Maintaining Ham Radio Hotspots

Version 9

----- AE9EE, Jim Hall, ae9ee.jim@gmail.com -----

Many hotspots come with programming on MicroSD cards, but the Pi-Star software can get corrupted. This article explains how to replace files and avoid problems in the future. The “Etcher” software mentioned will both format the micro SD card and record the Pi-Star image file on the card. A 16GB, Class 10, Micro SD card is adequate.

The following instructions assume you have acquired your DMR ID number, have an account with Brandmeister or other network, and have a password. This information will then need to be entered into the Pi-Star “Configuration” page when it appears at the end of this procedure.

1. Download the pi-star image from the **pi-star.UK** web site. Select **Pi-Star_RPi_V4.1.4_08-Feb-2021.zip** or a newer dated version. Unpack the ZIP file.
2. **Also open “Pi-Star Tools”** and select “Wifi Builder”. Enter the appropriate SSID and password for the WiFi account where the hotspot will be located. This will create a “wpa_supplicant.conf” file you will use later in step 8.
3. Plug the SD card ADAPTER into a USB port on your computer.
4. Start the “Etcher” program. Select the downloaded Pi-Star file name that ends with “disk image file”.
5. In “Etcher”, select the CORRECT DRIVE number to record the file to your microSD card. **BE SURE you have the correct drive selected.** If you have the main hard drive by mistake, it could **completely erase all your files** on your computer.
6. Click on "Flash" in Etcher to record the image file to the card. It will also test the file on the card immediately afterward to look for any issues.
7. After the image is recorded, your computer may indicate that you must “insert a disc”. Simply remove the SD card holder and reinsert it in the adapter. **Ignore any "Format this disc" warnings.**
8. Drag the copy of the “wpa_supplicant.conf” file you created in Step 2 to the directory list on the microSD card just created and drop it in the file list.
9. Use the EJECT process in Windows to remove the new microSD card to avoid corrupting it. **Insert the micro SD card in your Hotspot.**

10. Apply power to your hotspot and wait for **5 to 10 minutes** as it establishes a WiFi signal.
11. Since you copied the "wifi supplicant" file on your sd card, you should be able to open that main wifi account.
12. Start a web browser on your computer. On a Windows computer, type in <http://pi-star>. On a Mac, type in <http://pi-star.local>. Be sure to type in the "Address" bar not the "Search" bar of your browser.
13. **The "No Mode Defined" Pi-Star page should open and ask for a Username and Password. Enter "pi-star" and "raspberry".** You can change the password later.
14. You will enter most of your information on the "Configure" page. As you progress, be sure to "Apply Changes". Print a copy of the "Configure" page for future reference. You may be required to reenter the "RADIO / MODEM TYPE" several times. **WAIT** for the "Configure" page to return on the screen each time you "Apply Changes". **Check ALL SETTINGS against your printout to make sure nothing else has changed each time.**
15. At the bottom of the "Configure" page your local WiFi information as entered on the "Wifi Builder" as a "wpa_supplicant.conf" file will appear. **Note the IP address assigned by your router.** You will use it to display the Pi-Star pages on your computer.
16. After entering all your data and the simplex frequency of your HT found in your code plug, go up to the menu at the top of the page and select "Update". Wait for the word "Finished" to appear at the bottom of the page in green text. You may need to run "Update" a second time to get all the current files. **CAUTION:** if you have multiple hotspots, be sure you use different RF frequencies in each one to avoid possible feedback loops.
17. Go to the "Configure" page and view the "General Configuration" part of the page. The first item **"Hostname"** can be changed so you can find and connect to this hotspot more easily. Do not use any spaces or grammatical markings like quote marks. Use letters or numbers or a combination of them. If this was your third hotspot, for example, something like "3Hotspot" or "3PiStar" might be appropriate. Press "Apply Changes" to save the entry and wait for the Configure page to return.
18. Activate DMR on the Configure page and 'Apply Changes', then fill in your DMR number in the "General Configuration" page and 'Apply Changes' again.
19. Go to the "Admin" link and power OFF and ON to your hotspot to reload the updated files.

20. On your computer, select your main WiFi account entered in step 14. As many as 10 wifi addresses can be stored in the hotspot. It will search through your list and connect to the strongest signal it finds.
21. Congratulations. Open pi-star and view the Dashboard as QSOs are recorded. Double click on any callsign and QRZ will open that account if the ham has one. You can log contacts and send QSL cards within QRZ if you wish.(I have no commercial ties to QRZ.)

Create a backup “image” file to use to create a replacement SD card:

There is a free Windows 10 app, "WinDisc 32 Imager", that allows you to create an “image” file that represents the complete microSD card currently in your hotspot. It can be found on SourceForge.

1. Download the free "WinDisc 32 Imager" application, unzip and install it.
2. Turn off the power on your hotspot and remove the microSD card which is currently functioning correctly.
3. Place the Hotspot's SD card in the adapter and plug it into the USB port on your computer and select the drive.
4. Start the “WinDisc 32 Imager” application and in the “Image File” box type in the name you wish to use for your new backup image file. The selected drive will appear in the “Device” box. **BE SURE you have the correct drive selected.**
5. At the bottom of the application, press the “**READ**” button and the Progress line will show the image file being created.
6. Add the file extension **.img** to the file name. Store the file in a clearly marked location on your hard drive

How to create a NEW microSD card

If an SD card fails in your hotspot, simply open the “WinDisc32 Imager” application and place a newly formatted microSD card **of the same size** in the adapter and plug it into your computer.

1. In the top line enter the file name of the “image file” created previously for this hotspot.
2. **With the correct SD card drive selected**, press “**Write**”. It will caution you about writing to this location so be sure it is the correct SD card drive designation.
3. The “write time” can take more than 20 minutes.

4. Remove the new SD card and place it in your hotspot to restore operation. All of the Pi-Star settings will be restored to the condition established when the image file was created.
5. Once the new card is in your hotspot, go to the "Admin" page and select "Update" from the menu. The Pi-Star files will all be examined and any files that have been changed since the image file was created will be updated to their latest versions. Once the word "Finished" appears, your new SD card is up to date.

Alternative: Using the "Etcher" application to create your NEW microSD card:

As mentioned at the beginning of this document, the "Etcher" application will write an "image" file on an SD card and test the file. That testing process is an advantage. "Etcher" will perform this same process to record the backup image file on your new SD card.

Moving to a new version of Pi-Star.

Recently Pi-Star moved from version 3 to version 4. A quick way to make the transition is to use the "Backup/Restore" feature. Locate the "Backup" file from the version 3 settings. After creating a new microSD card for your hotspot with the latest Pi-Star version, use the "Restore" feature for that particular hotspot to transfer the previous settings on to the new version of Pi-Star.

Visual Identification of Pi-Star Dashboards

You can also change the background color displayed on the Pi-Star page to make it easier to distinguish one hotspot from another on the computer screen.

1. Open the "Configure" page and select "Expert" from the top menu.
2. Then select "MMDVMHOST" from the second menu set.
3. Then under "Tools" select "CSS Tool".
4. In the "Background" box at the top of the screen you can change the color by changing the value in the "Content" field. For example, replace the "ffffff" to fff00" (those are zeros, not letters) and the background will change to yellow. Look up the Hexadecimal Numbers on the web to learn other numbers you can use and the color associated with it.
5. Press "Apply Changes" to save the results.