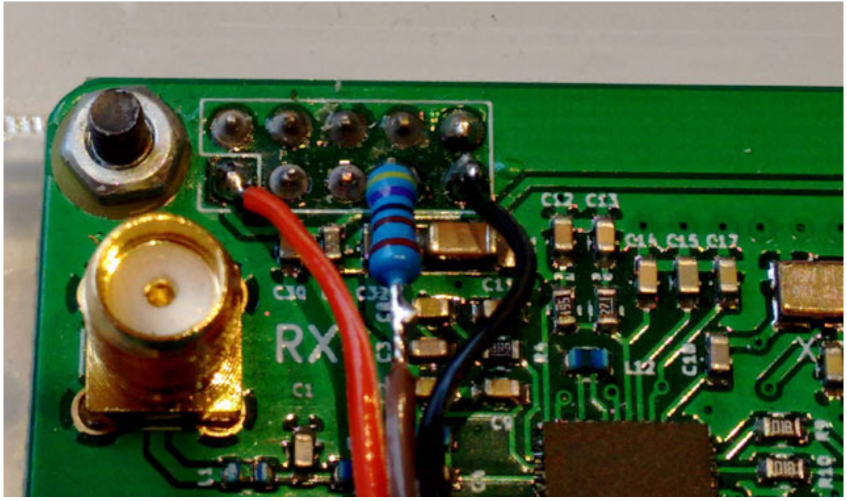
MMDVM Hot Spot Modification (Net-Switcher) Updated Version

Roger Clark (VK3KYY) back in November 2018 posted on his blog an interesting modification to the Jumbo/Zum spots, be it simplex or repeater boards, as long as the processor board used is a Raspberry Pi.
Original Article by Roger:
https://www.rogerclark.net/mmdvm-hotspot-hardware-network-switch/

What Roger did was to use one of the GPIO unused pins on the Pi, with a bit of code, created the ability to change MMDVM configuration with the use of a switch.



On the picture the red wire is connected to the +3V The Black wire is Ground.
The resistor should be a 10K.
The wiring is thus
10k to C
3V to NO
Gnd to NC
I placed the resistor on the C of the switch.
The NC or NO can be swapped around, it does not matter to the way the mod works.

Note that all Raspberry Pi Header pins are the same so be it a Zero or B+ makes no difference.

The Added Code

Later in this article I will show the code, first I will explain the concept.
Using Pi-Star, when changes are done to the configuration, these changes are recorded in a configuration file called MMDVM, in normal operations, changes can only take place by using the tools provided within Pi-Star. What the modification does is to allow two version of configurations files to exist, upon the selecting a position with the switch, that configuration is loaded and enabled, becoming a simple way to run two different modes, for example DMR+ on one position and DMR Brandmeister on the other, or any other mix of configurations.

Roger's original code, did not allow any changes to the configurations once saved into the device, it was necessary to manually copy the altered configuration into the system.
I modified the code, so that any mode change to either configurations is saved by moving the switch to the alternate position. This works well and easy to implement.
I further found that the code was limited on what configurations it would work on, that is, it only worked on DMR, with some Fusion setting, other setting mixes of modes the likes of NXDN including some YSF2XX modes, did not work. This is now sorted, allowing any mix of configurations to be saved.

The hardware modification, is as before, consists the use of an unused GPIO pin on the Pi, with the application of 0Volts (Pull Low) or +3 V (Pull High) via the 10 K resistor, providing the manner to control what configuration is to applied.

One would ask why should I do this modification ?

With the recent changes to the DMR Marc network using the IPSC servers, doing away with the select reflector method, is now more like Brandmaister method, the use of DMR gateway is no longer necessary in the configuration, both system are operated by direct talk group selection, doing away with the old method that of reflector selection followed by the relative talk group . On an operational point of view, this simplifies things doing away with one step, when selecting a talk group.

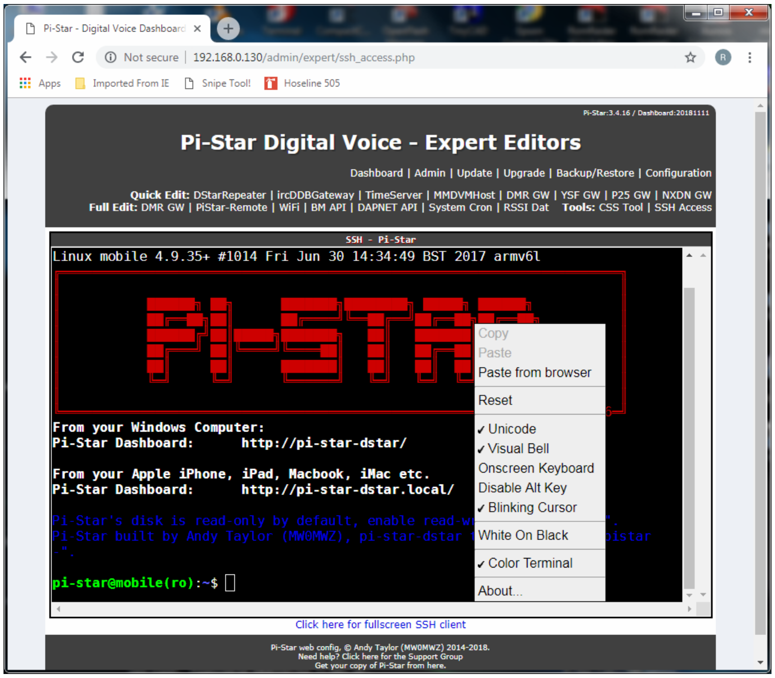
How the Code Works

The configuration settings are stored in several configuration file backups, of the modes and networks selected, every time the system is started, the set of backups are loaded into the configuration files relative to the switch position, even if the switch position is changed when the unit is turned off, upon start up the correct files get loaded relative to that switch position.

When the unit is turned on, any configuration changes for that switch position are saved by changing the switch to the other position, repeating the process to save the other alternate configuration.

Installing the script

Changes the install procedure have been made, the script code will be downloaded from GitHub to your device. some commands are still required to complete the install.


Pi-Star - Digital Voice Dashboard
Not secure | 192.168.0.130/admin/expert/ssh_access.php
Apps
Imported From IE
Snipe Tool!
Hoseline 505
Pi-Star:3.4.16 / Dashboard:20181111

Pi-Star Digital Voice - Expert Editors

Dashboard | Admin | Update | Upgrade | Backup/Restore | Configuration
Quick Edit: DStarRepeater | ircDDBGateway | TimeServer | MMDVMHost | DMR GW | YSF GW | P25 GW | NXDN GW
Full Edit: DMR GW | PiStar-Remote | WiFi | BM API | DAPNET API | System Cron | RSSI Dat Tools: CSS Tool | SSH Access
SSH - Pi-Star
Copy
Paste
Paste from browser
Reset
✓ Unicode
✓ Visual Bell
Onscreen Keyboard
Disable Alt Key
✓ Blinking Cursor
White On Black
✓ Color Terminal
About...

```
Linux mobile 4.9.35+ #1014 Fri Jun 30 14:34:49 BST 2017 armv6l

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

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

Pi-Star's disk is read-only by default, enable read-w                  ".
Pi-Star built by Andy Taylor (MW0MWZ), pi-star-dstar                  pistar
-".

pi-star@mobile(ro):~$
```

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.

Follow these steps

a/ On the Pi-Star Click on **Configuration**
b/ Click on **Expert**
c/ Click on **SSH Access**

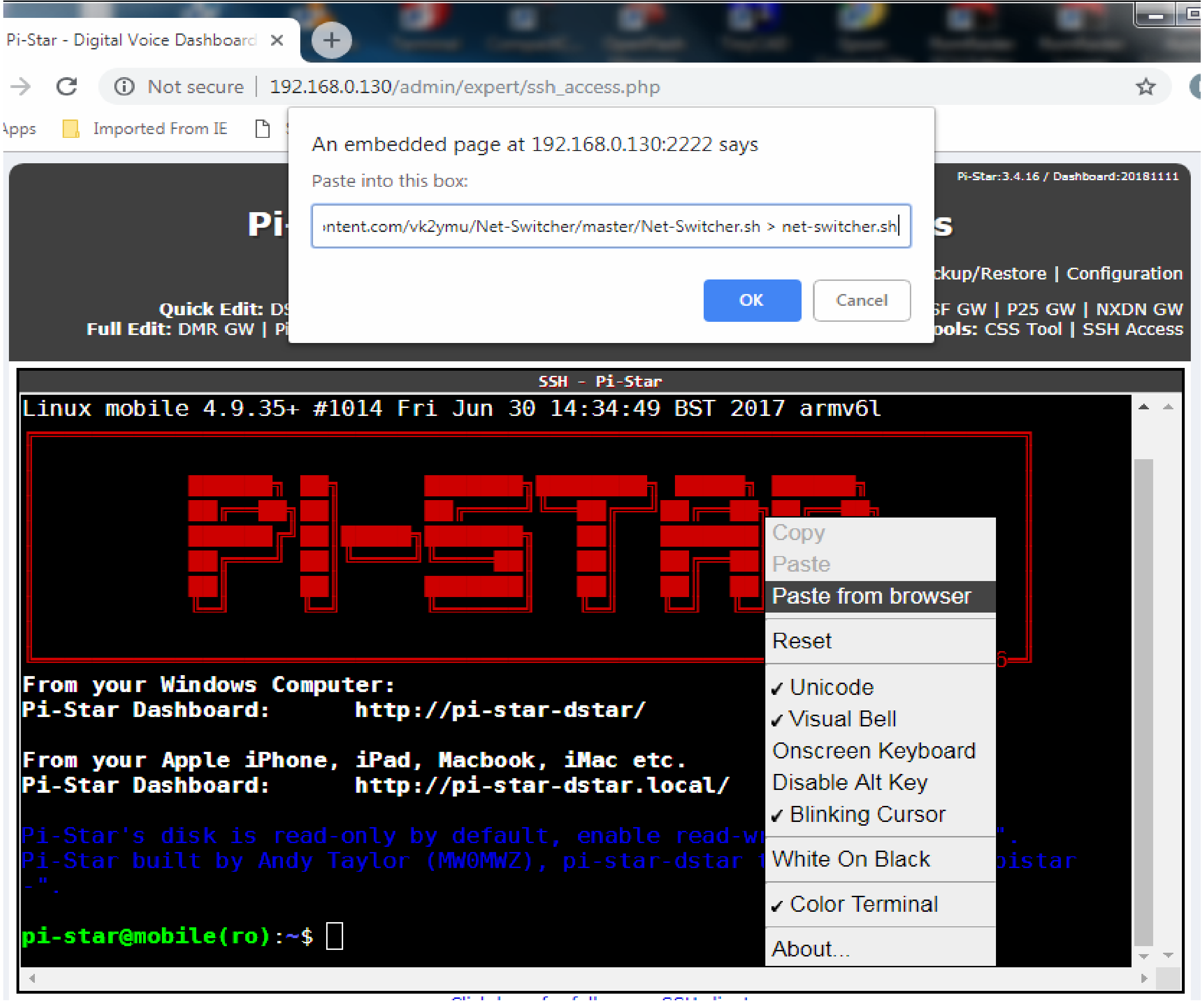
You now need to log into the system, enter your user name, default is "pi-star"
then the password, default is "raspberry"

Next we need to change the Pi file system read write.
At the prompt enter **rpi-rw**
The end of the prompt will change from (ro) to (rw)

Next we will import the code from Git Hub
At the prompt we insert the following line

curl https://raw.githubusercontent.com/vk2ymu/Net-Switcher/master/Net-Switcher.sh > net-switcher.sh

You can copy and paste ..



An embedded page at 192.168.0.130:2222 says

Paste into this box:

```
ntent.com/vk2ymu/Net-Switcher/master/Net-Switcher.sh > net-switcher.sh
```

OK Cancel

```
Linux mobile 4.9.35+ #1014 Fri Jun 30 14:34:49 BST 2017 armv6l

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```

Click enter and the scripts with the file name **net-switcher.sh** will be installed
You can confirm this by typing at the prompt "ls" (No quotes)

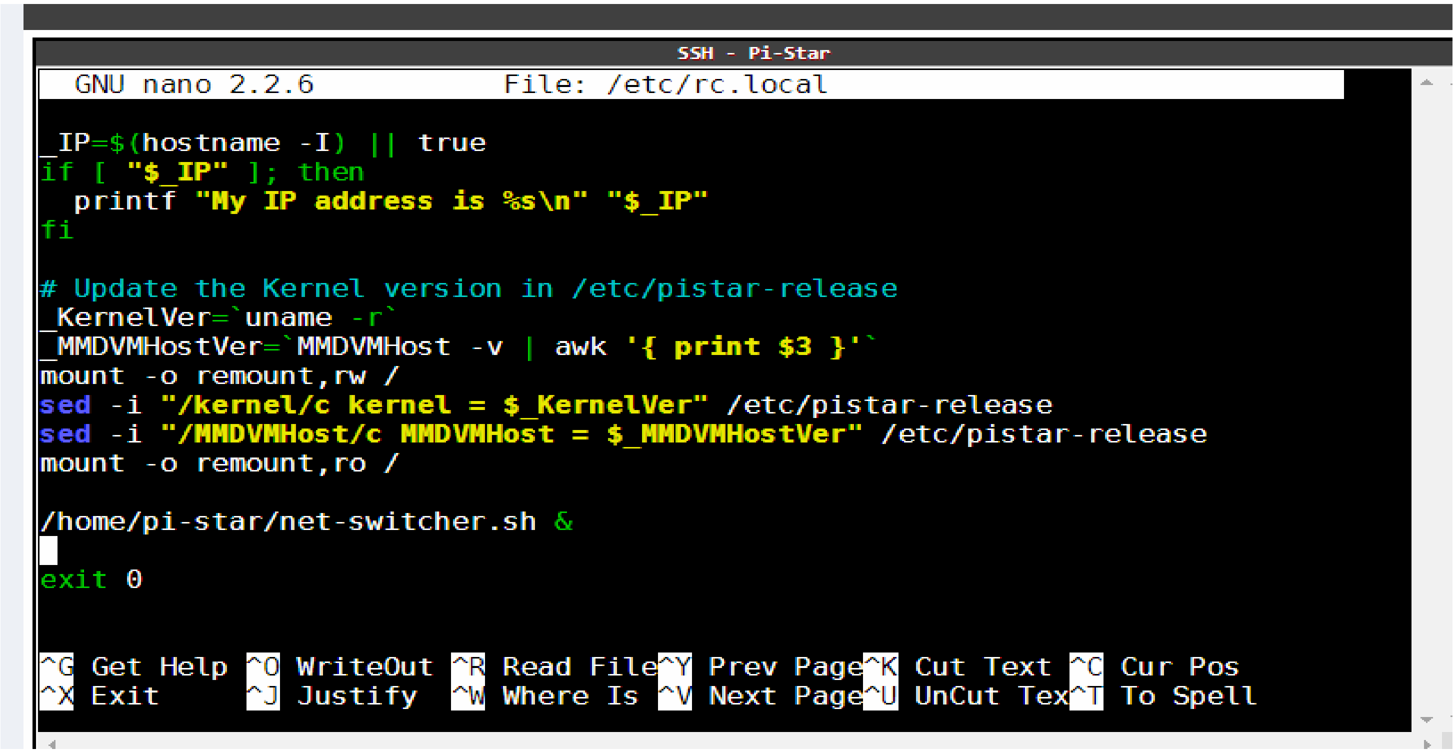
The following command turns the script into an executable code
sudo chmod +x net-switcher.sh

if you do the ls command, you will note the name has now turned to a green colour, indicating the code is now in executable form.

We now make the code executable on start-up, we need to insert a command line in a file called "**rc.local**"

The following command opens this file in editing mode
At the prompt type or paste **sudo nano /etc/rc.local**

Press Enter, carefully scroll down to the end of the file, above the line **exit 0** add the text
/home/pi-star/net-switcher.sh &



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  GNU nano 2.2.6            File: /etc/rc.local

_IP=$(hostname -I) || true
if [ "$_IP" ]; then
  printf "My IP address is %s\n" "$_IP"
fi

# Update the Kernel version in /etc/pistar-release
_KernelVer=`uname -r`
_MMDVMHostVer=`MMDVMHost -v | awk '{ print $3 }'`
mount -o remount,rw /
sed -i "/kernel/c kernel = $_KernelVer" /etc/pistar-release
sed -i "/MMDVMHost/c MMDVMHost = $_MMDVMHostVer" /etc/pistar-release
mount -o remount,ro /

/home/pi-star/net-switcher.sh &

exit 0


^G Get Help ^O WriteOut ^R Read File^Y Prev Page^K Cut Text ^C Cur Pos
^X Exit     ^J Justify  ^W Where Is ^V Next Page^U UnCut Tex^T To Spell
```

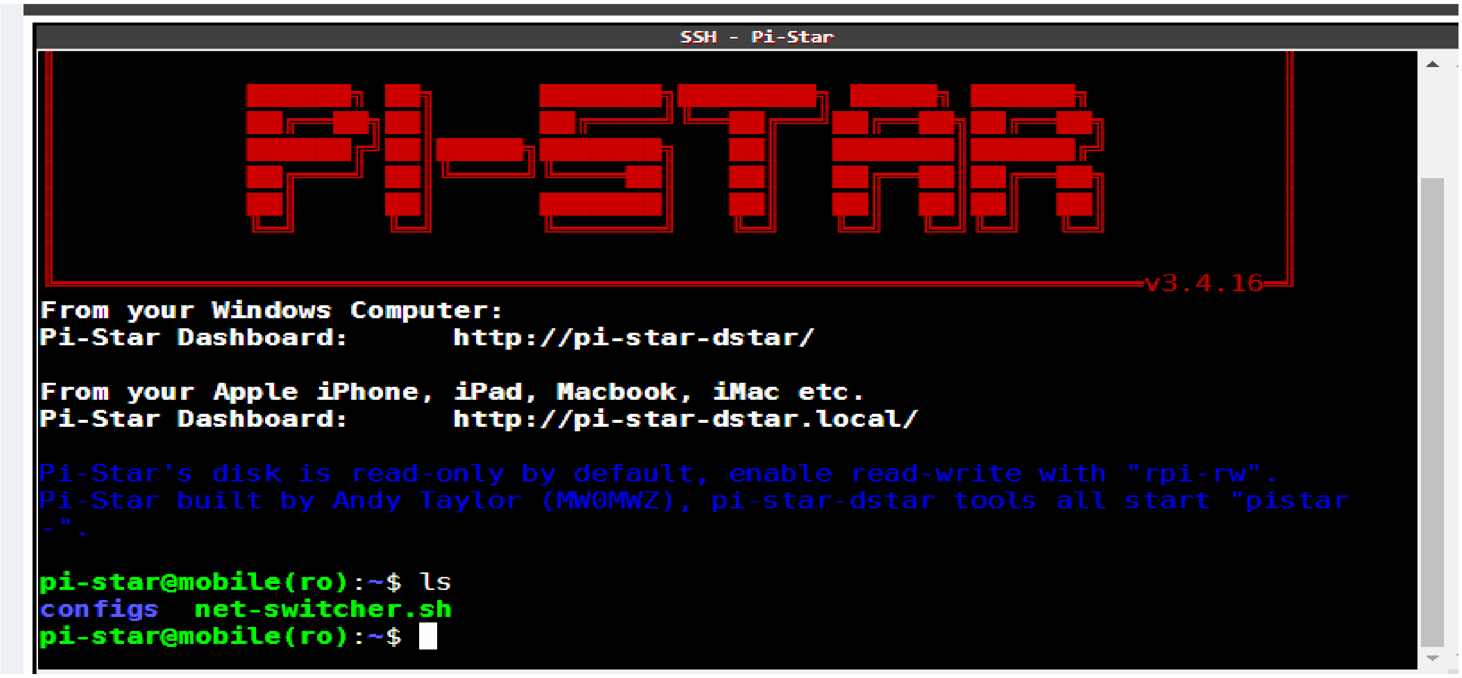
Once done click CTRL X followed with Y   the file is now patched

You can now exit the editing console, type "exit"
Once you have a dialog on your screen "Connect"
Turn off the power on the Pi
Turn it back on and configure the switch positions to your desired modes.

This command is used for diagnostics **sudo ./net-switcher.sh** not required if all installed as it should have. Using the above command, on the terminal screen you will see the activity of the code as the switch is changed from one mode to the other.

The files installed should look like this after having exercised the switch, note that the changing of the switch position creates the backup files.

Confirming that the correct files exist, your screen should look as this. (Type "ls at the prompt.)



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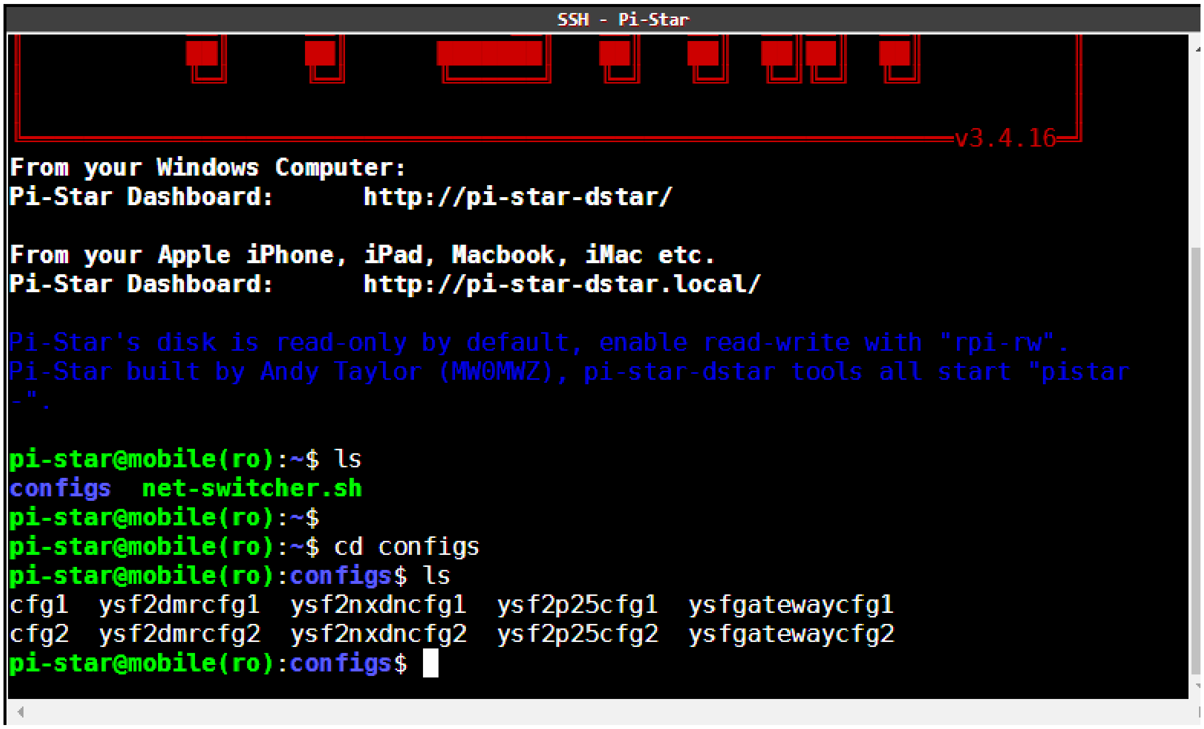
-".

pi-star@mobile(ro):~$ ls
configs  net-switcher.sh
pi-star@mobile(ro):~$
```

Now we confirm that the back up files have been created.
Type at the prompt "cd configs" press enter



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configs  net-switcher.sh
pi-star@mobile(ro):~$
pi-star@mobile(ro):~$ cd configs
pi-star@mobile(ro):configs$ ls
cfg1  ysf2dmrcfg1  ysf2nxdncfg1  ysf2p25cfg1  ysfgatewaycfg1
cfg2  ysf2dmrcfg2  ysf2nxdncfg2  ysf2p25cfg2  ysfgatewaycfg2
pi-star@mobile(ro):configs$
```

The created back up files will look as the above screen

Recognizing the following contributors
Roger Clark VK3KYY   for the original concept
Earnest Ganuelas VK2ERG Linux Script Mentoring
Scott Evans VK7HSE Linux Mentoring

I am ignorant of Linux operating system, the help received from VK2ERG and VK7HSE has allowed me to create the script code used in this modification, scripting language is very similar in structure to the C language, something I am familiar with, however the syntax for variables with some functions differs, it was fun working it out...

Have fun.
VK2YMU