

RASPBERRY PI 2,3,4 ALLSTARLINK + DVSWITCH
SERVER INSTALLATION GUIDE.



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Thanks to Dave G0KBM
Special thanks go out to
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And Ken M1DYP

DESIGN CUSTOMIZATION

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Flashing the ASL image

For all operating systems, we recommend downloading and installing balenaEtcher. It's available for macOS, Windows, and Linux. If you're flashing for RaspberryPi, an SD card reader is required.

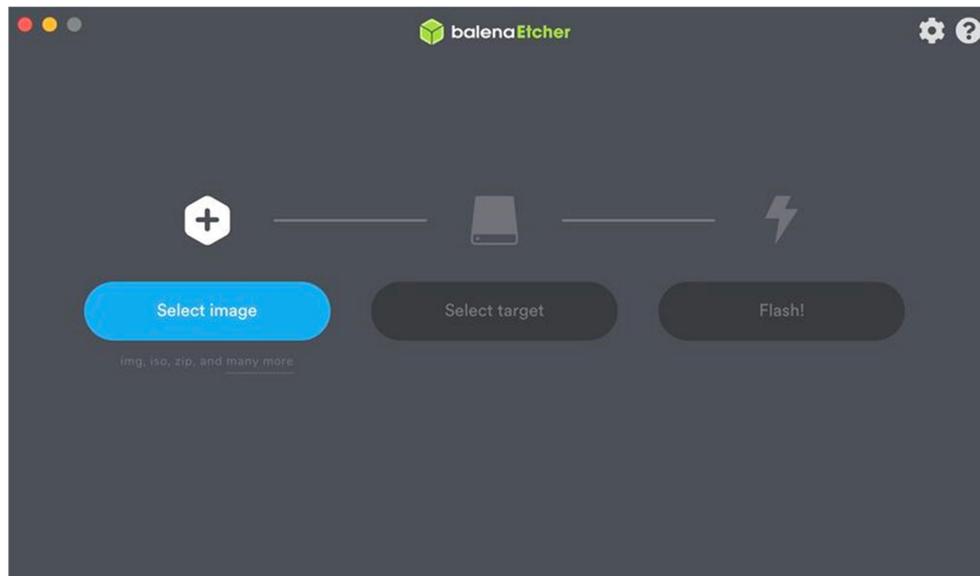
[Download balenaEtcher](#)

USB Thumbdrive (PC/Pi4)

1. Follow the directions below, but use a USB thumbdrive instead.

SD Card (Pi2-Pi4)

1. Open balenaEtcher
2. Insert your SD card into your SD card reader
3. Press "Select Image" and locate the downloaded image (e.g. asl-2.0.0-beta.6-ke1kcc-20210324-rpi-armhf.img)



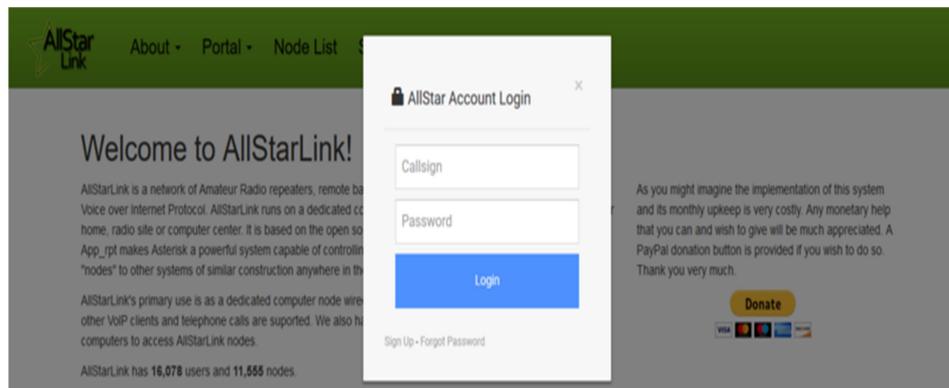
4. If your SD card is ready to flash, you can simply press the "Flash!" button:



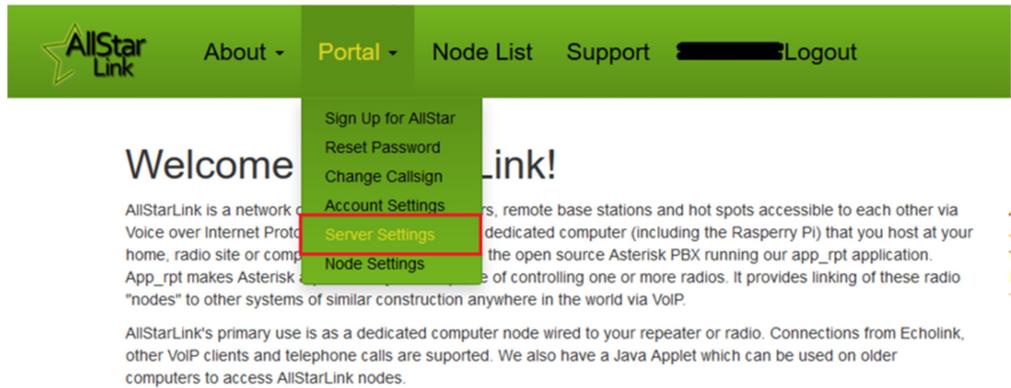
5. Insert your SD card into your Raspberry Pi and boot it up!

Login & Create a Server

Once your account is verified, login to your account at <https://www.allstarlink.org/>



You will need to create a "server" : Click on <Portal> then <Server Settings>.



Click on **<Add a new server>**.

Please take the time to read the instructions on each page.

Then click **<Proceed with Server Setup>** if needed.

Fill in all of the information and click **<Submit>** at the bottom of the page.

Server Settings

Edit Server

Server Name

 25 characters max

Server Location

 City/State/Province of server location. 30 characters max.

Site

 Site Name, Bldg Number, etc. 30 characters max. Optional.

Affiliation

 Affiliated with a club, etc. 30 characters max. Optional.

Hostname

 Unix Hostname. 25 characters max. Optional.

IAX Port

 Normally 4569 when only one server behind a NAT router.

Proxy IP

 Normally blank. Only needed in rare cases. Optional.

Click the map to select server latitude & longitude or type them in.

Latitude

Server Longitude

Map Satellite Search Box

Google Map data ©2019 50 m Terms of Use

Request a Node number

At the top of the page, click **<Portal>** and then on **<Node Settings>**.

AllStarLink About Portal Node List Support Logout
 Sign Up for AllStar
 Reset Password
 Change Callsign
 Account Settings
 Server Settings
Node Settings
 Edit Server
 Server Name: My New Server (25 characters max)
 Server Location: Somewhere (30 characters max)
 Latitude: 89.999665
 Server Longitude: -91.665742

Then click **<Request a new node number>**.

AllStarLink About Portal Node List Support Logout
 Node Settings
[Request a new node number](#) edit one below

Node number	Server	Callsign	Password	Web Xceiver	Show Cmds	Rvrs Ap	Phone Portal	Rmt Base	Agile
50505	My New Server	[redacted]		Yes	No	No	Yes	No	No

 1 Mouseover password to show
 © 2019 AllStarLink Inc. This site is dedicated to the memory of Jim Dixon W6BNL

Select which server you would wish to have a node number assigned to
 if you need more than one node number for the same server, repeat this process
 A comment of 'additional node on same server' would be appropriate

Node Settings

Request New Node Number

Server

Select server for the new node. It can be changed later.

Do not request additional nodes here. Only one node per request can be processed.

Message for Admins

Requesting my first node number. Thank you very much.

Optional message.

Your first node will be automatically approved. Subsequent nodes are subject to approval.

Once your node number request(s) are processed you will receive an email.

Edit Node settings

Log into your account on <https://allstarlink.org/>

Click <Portal> then <Node settings>.

The AllStarLink node numbers that have been assigned to you are displayed here.

Select which node you wish to view/edit.

Fill in the information for you node and click <Submit>.

Node Settings

Edit Node

Node Number

Node number cannot be changed.

Password

6 to 15 characters.

Callsign

15 characters max.

Frequency

20 characters max. Optional.

CTCSS Tone

20 characters max. Optional.

Select the server for this node.

Allow Web Transceiver access?

Show function list on Webtransceiver?

Allow Reverse Autopatch access?

Allow Telephone Portal access?

Is node a remote base station?

If remote base, is it frequency agile?

Write down your node number, password and the call sign you assigned for the node as you will use them to configure your AllStarLink system.

Install and configure ASL to your computer

Consult your owners manual or your favorite internet search engine for how to install an image for your computer system.

Install the AllStarLink disk image to your computer. Insert the appropriate media for your system and boot the computer.

When the login prompt appears enter the user ID of

repeater

and press **<Enter>**.

Enter the default password of

allstarlink

Follow the on screen instructions for the initial password change.

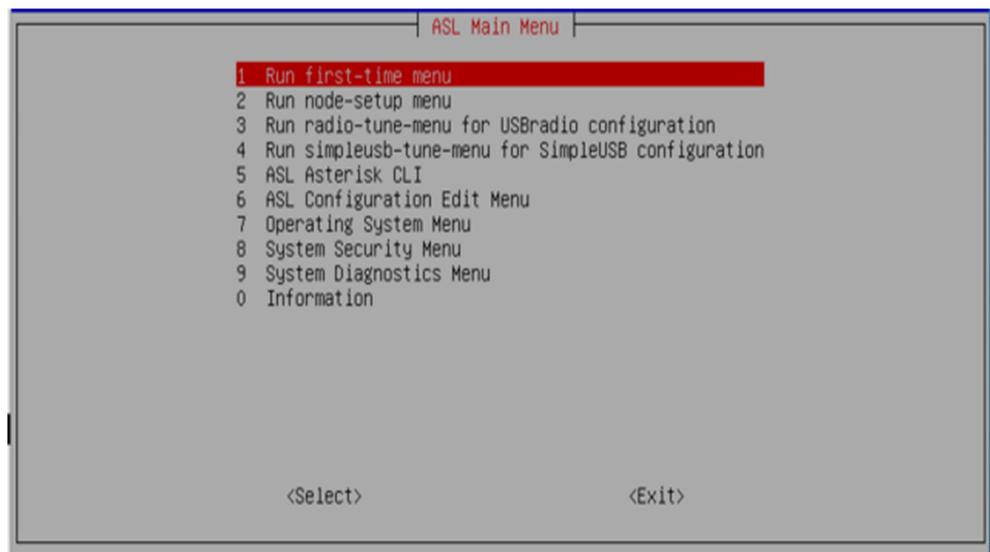
For users familiar with the linux operation system you may proceed to edit the system manually.

For users not familiar with linux and ASL, at the Linux CLI (command line interface)

Type **sudo asl-menu** as the example below shows.

```
repeater@repeater:~$ sudo asl-menu
```

This will load the AllStarLink configuration menu.



AllStarLink software setup

Choose option <1>.

```
First-time
Welcome to AllstarLink first-time setup.
This script will walk you through a few of the basic system setup options.

The root login is disabled for SSH and CONSOLE login.
By setting the root password you will allow root to login on the console.

Would you like to set the root password?

<Yes> <No>
```

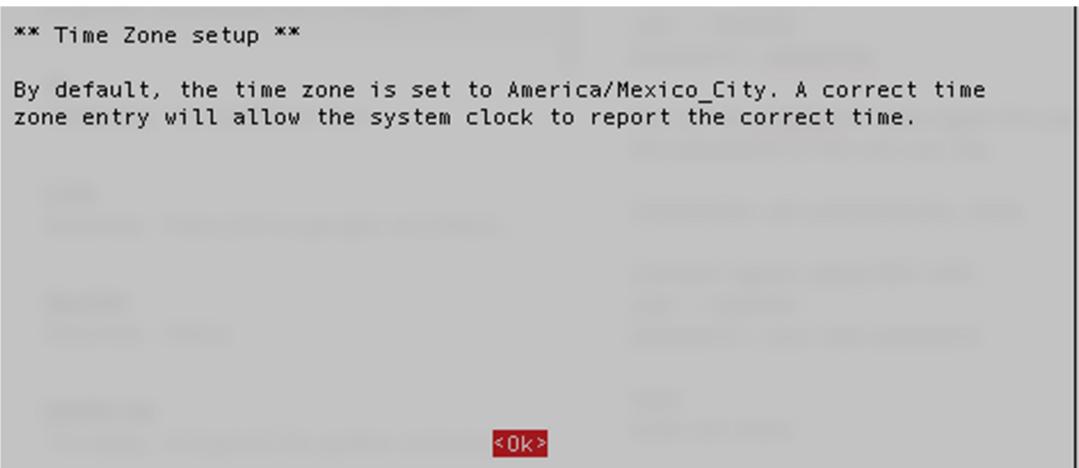
Since it is your first time setup, answer **<No>**.

Setup now will ask if you want to change "**repeater**" account password with select answer **<No>**.

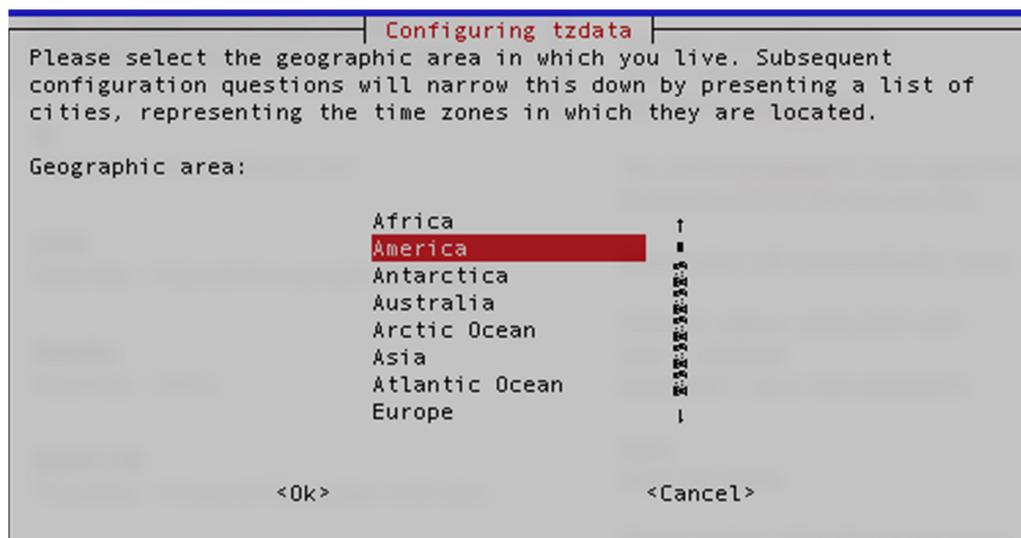
```
repeater password
Would you like to change your password?
User: repeater

<Yes> <No>
```

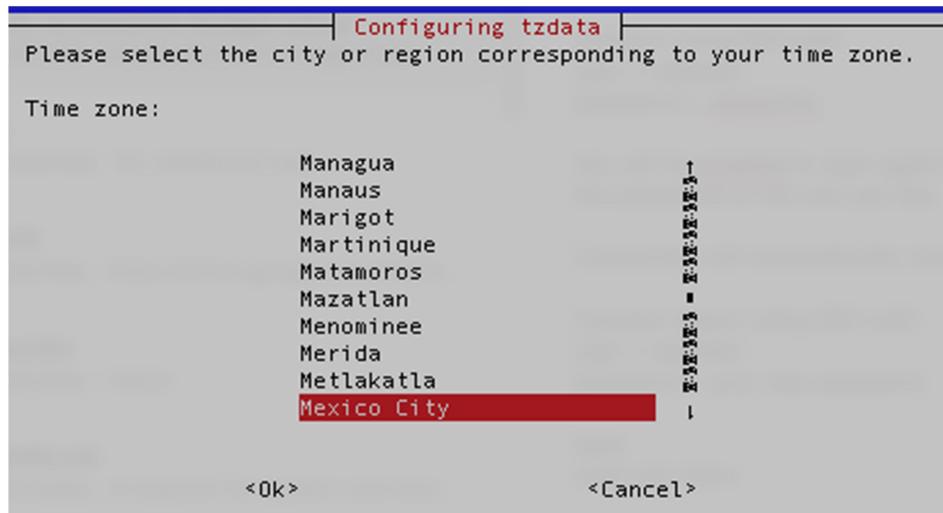
Now lets set time zone **<Ok>**.



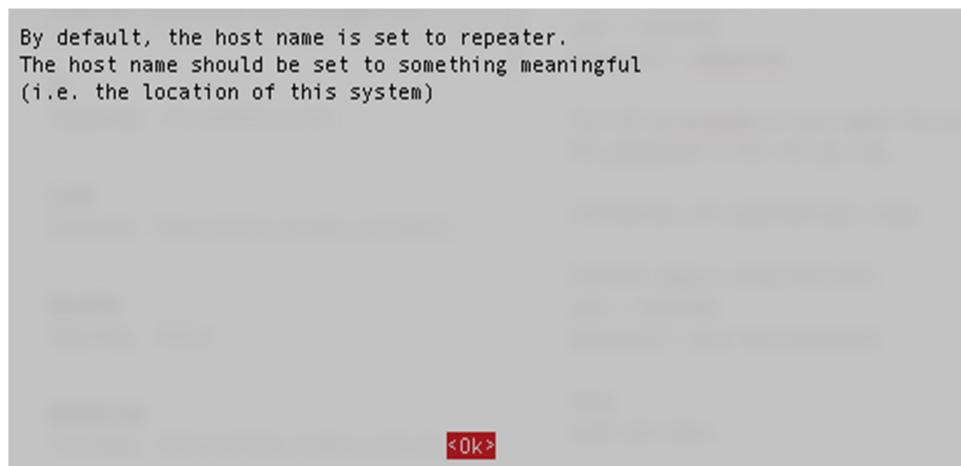
Choose the node's continent Europe.



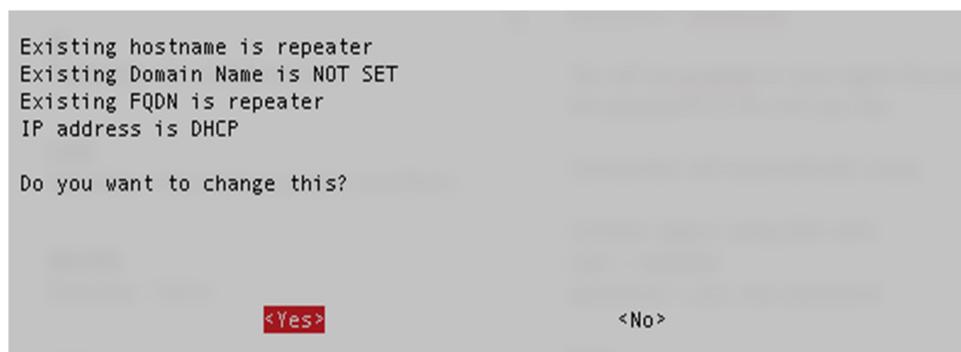
Choose the node's city London.



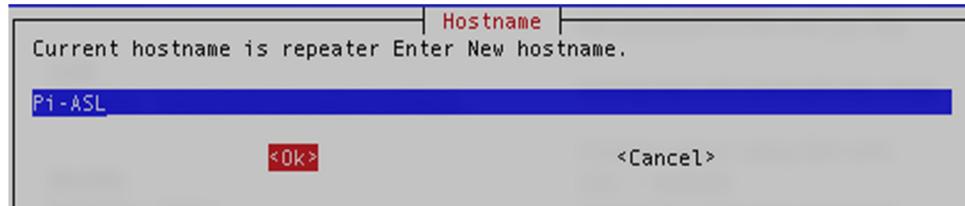
Next you can change the name of you host name, the default is **repeater**.



Answer **<Yes>** to be able to make changes.



Type the new host name and hit **<Enter>**.

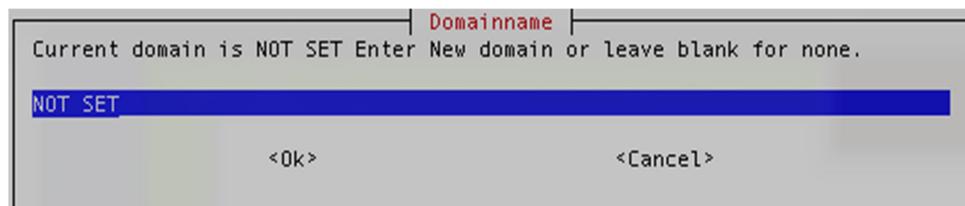


```

      Hostname
Current hostname is repeater Enter New hostname.
Pi-ASL
      <Ok>                <Cancel>

```

If you want to set up a domain, type it and hit **<Enter>**.

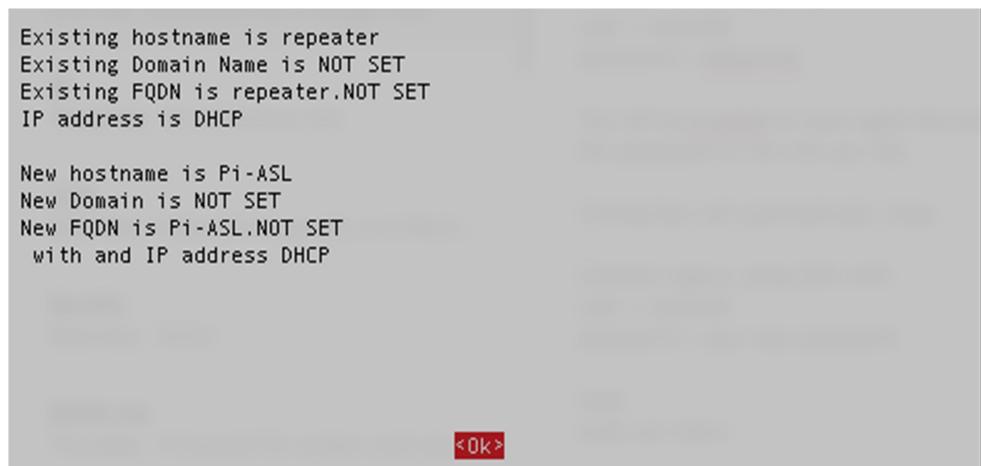


```

      Domainname
Current domain is NOT SET Enter New domain or leave blank for none.
NOT SET
      <Ok>                <Cancel>

```

Say **<Ok>** to this message.



```

Existing hostname is repeater
Existing Domain Name is NOT SET
Existing FQDN is repeater.NOT SET
IP address is DHCP

New hostname is Pi-ASL
New Domain is NOT SET
New FQDN is Pi-ASL.NOT SET
with and IP address DHCP

      <Ok>

```

Now you can make your network settings **<Ok>**.



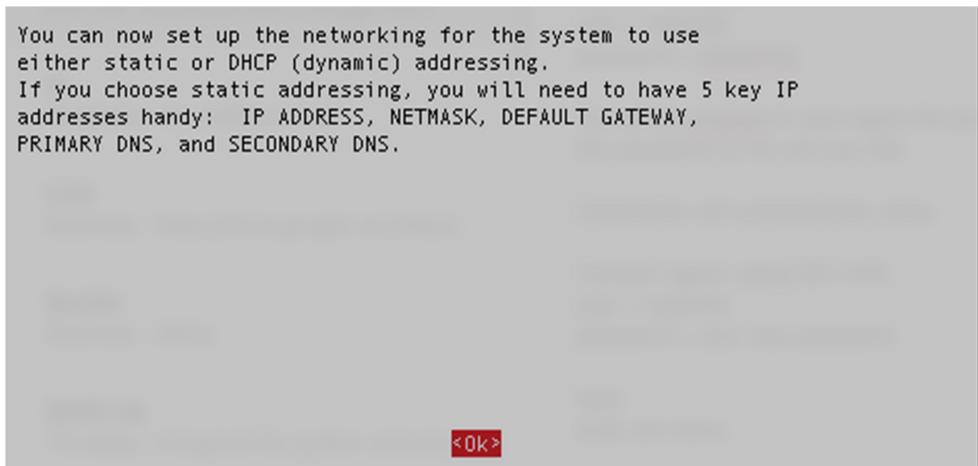
```

Setting for DHCP

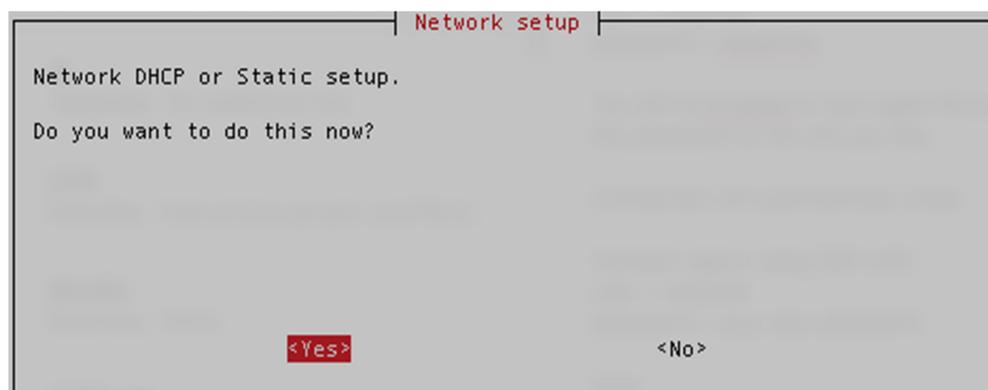
      <Ok>

```

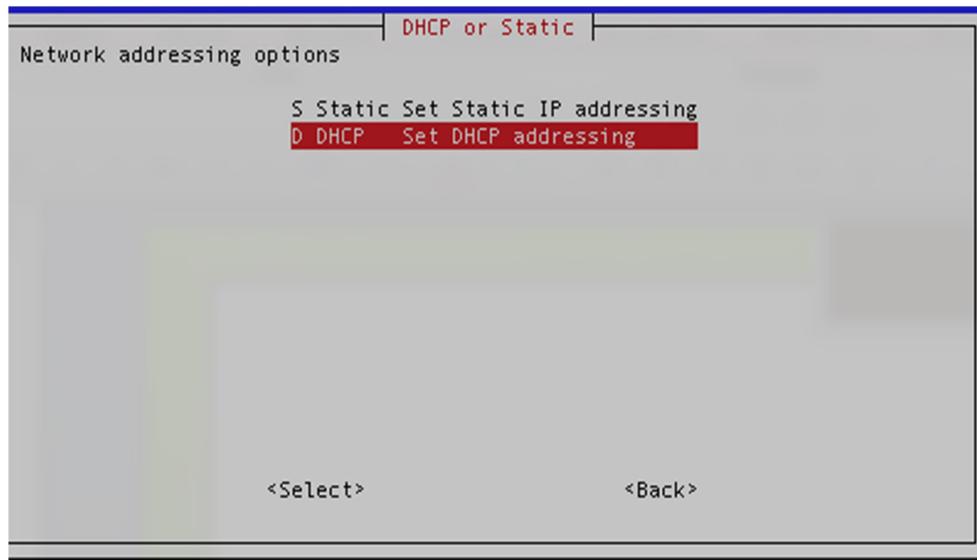
Just say **<Ok>** to this message.



To choose between DHCP or Static IP say **<Yes>**.



Use **<D>** for DHCP or **<S>**. for Static, if you choose Static, you will be asked to enter it next, for this example DHCP is in use.



Just say **<Ok>** to this message.



Just say **<Ok>** to this message.

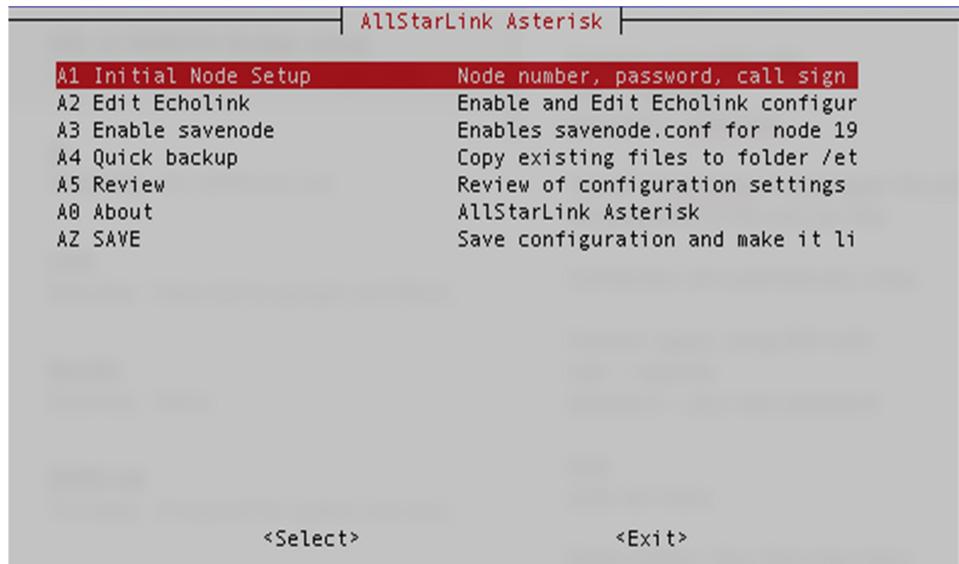


Just say **<Ok>** to this message.

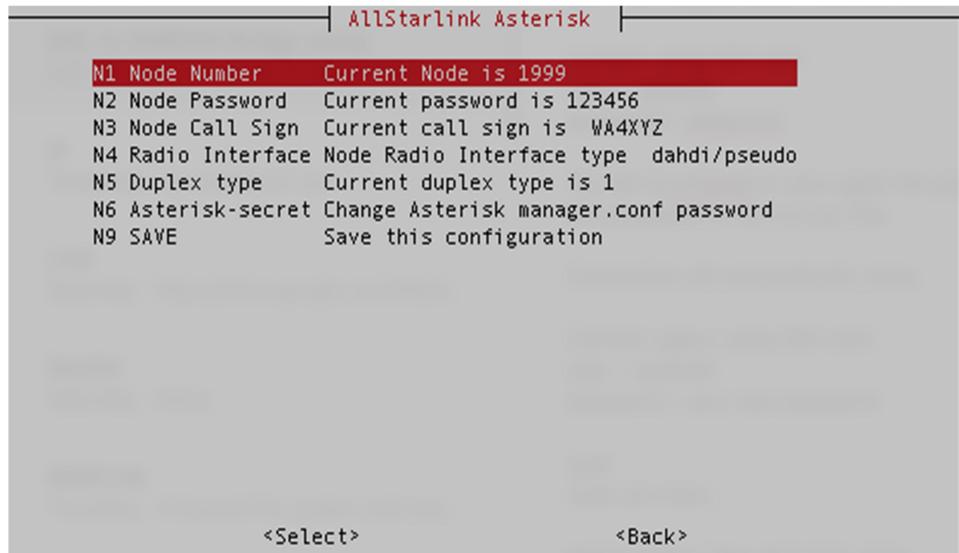
Importing the current node & Echolink configuration and
creating the temporary work environment

<Ok>

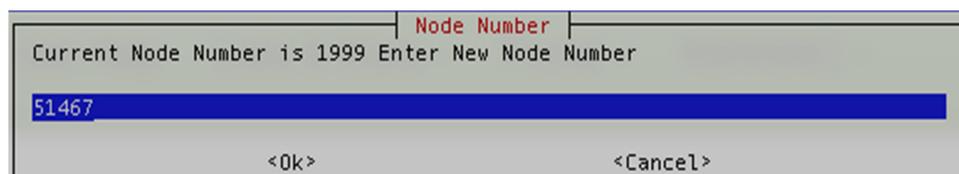
Choose option <A1>.



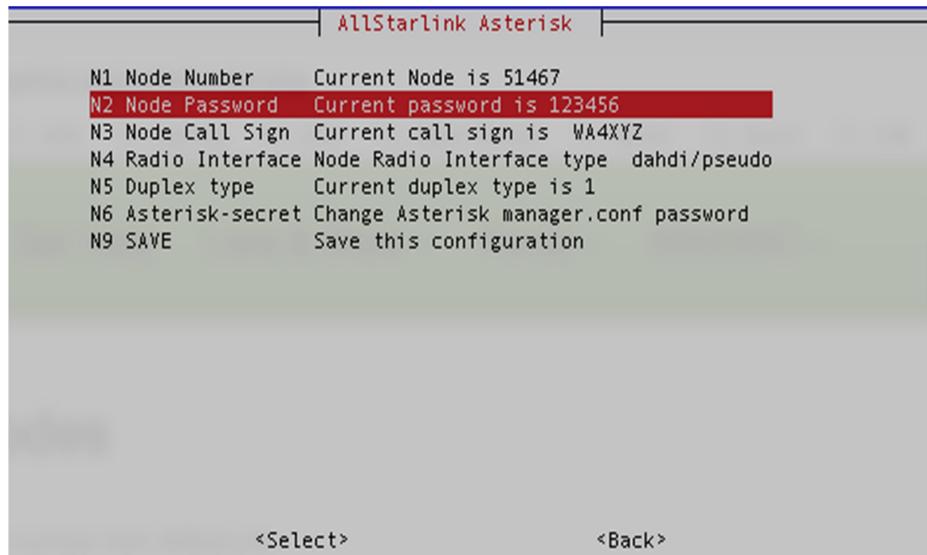
Choose option <N1>.



Type the node number for your node. Yes the one you previously wrote down from AllStarLink site.



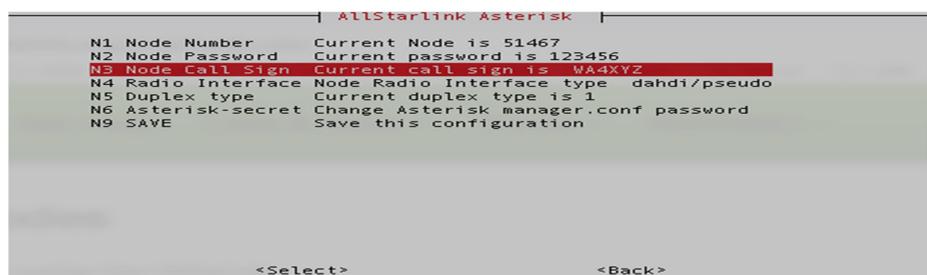
Choose option <N2>.



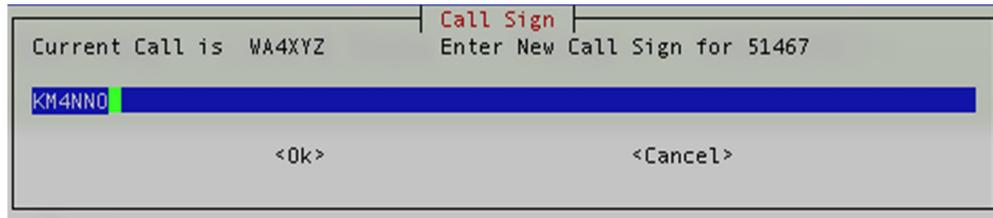
Type the node password for your node. Yes the one you previously wrote down from AllStarLink site.



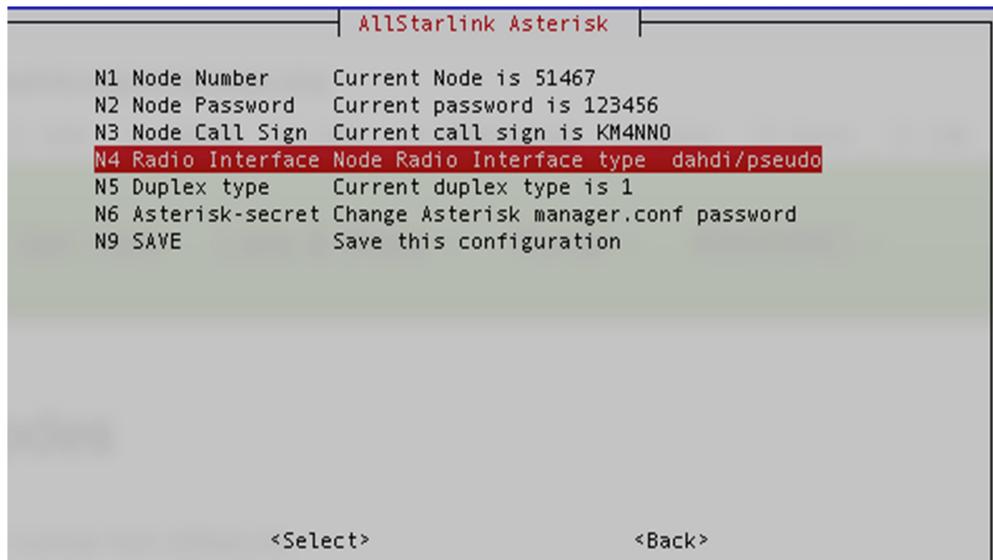
Choose option <N3>.



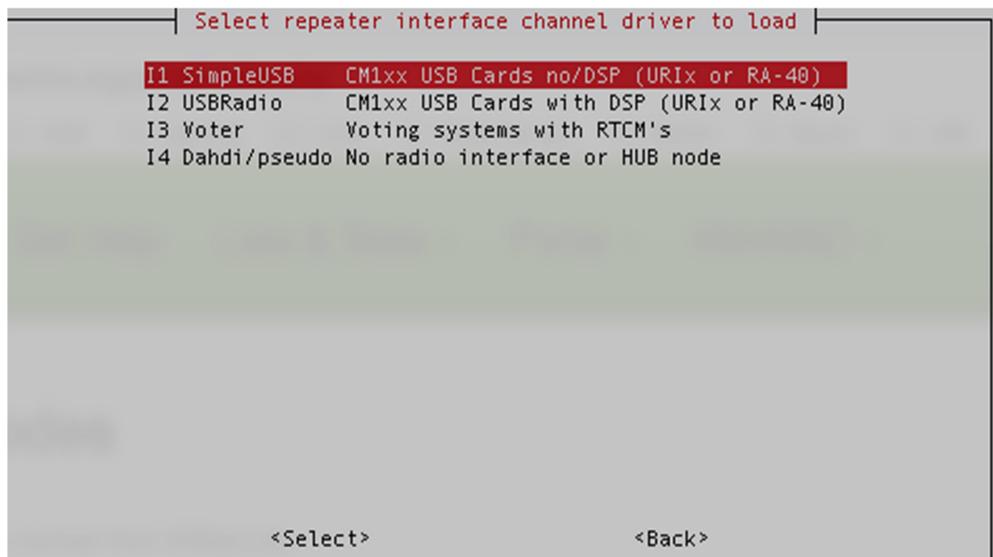
Type the call sign for your node. Yes the one you previously wrote down from AllStarLink site.



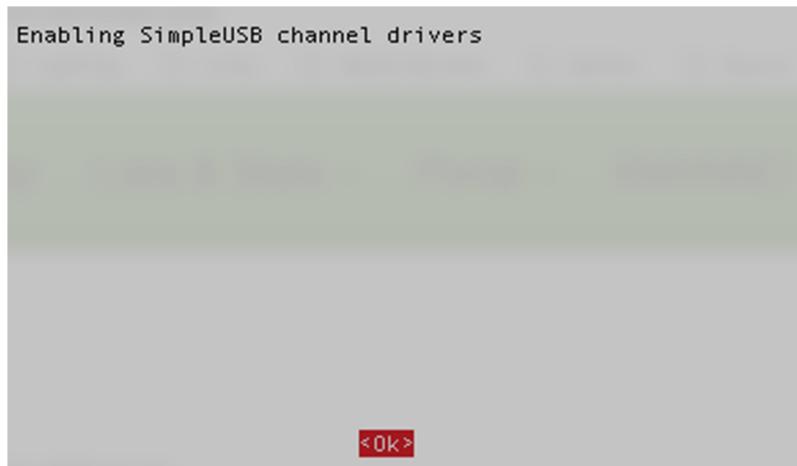
Choose option **<N4>**.



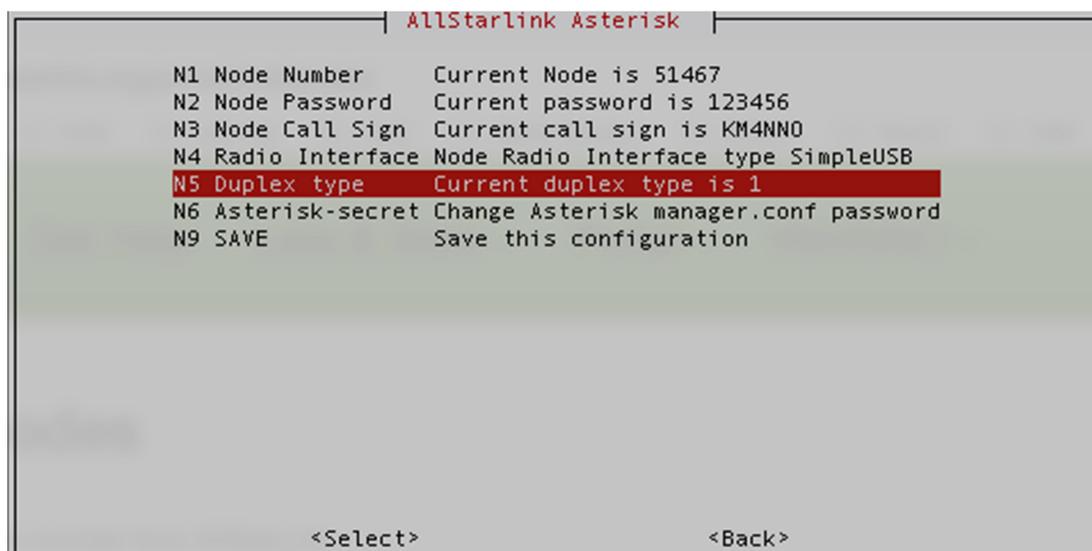
Choose option **<I4>** Dahdi/Pseudo No radio interface or HUB node.



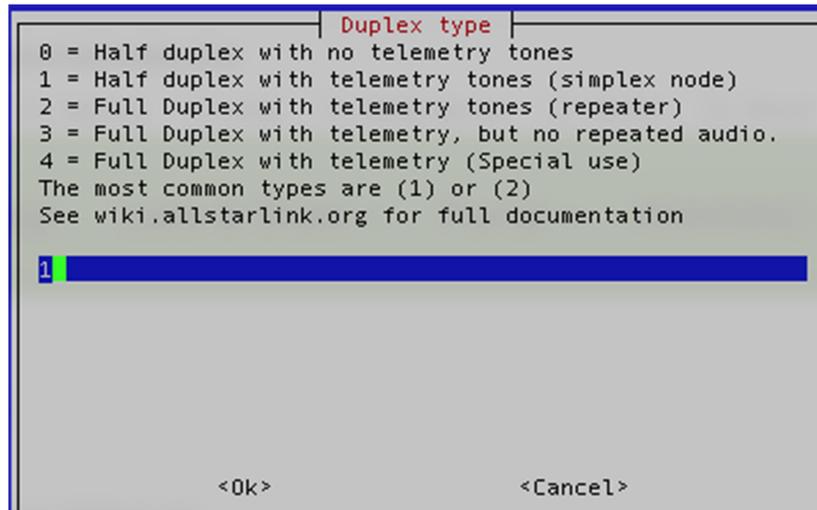
Just say **<Ok>** to this message.



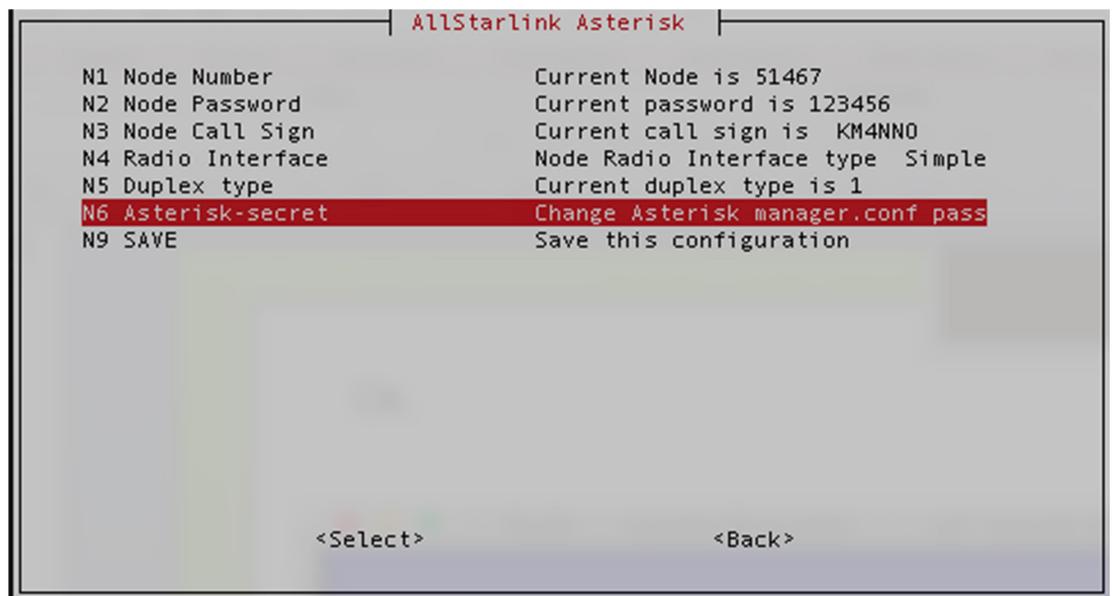
Choose option <N5>.



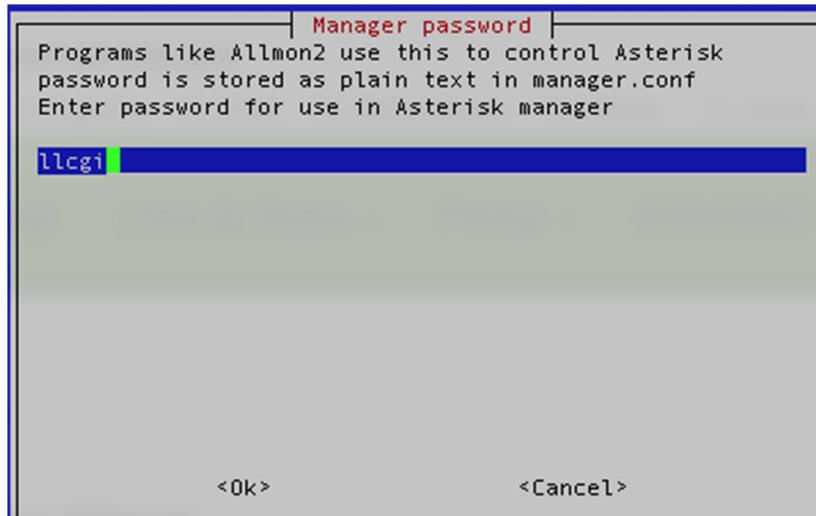
Your node will be a simplex node type <1>.



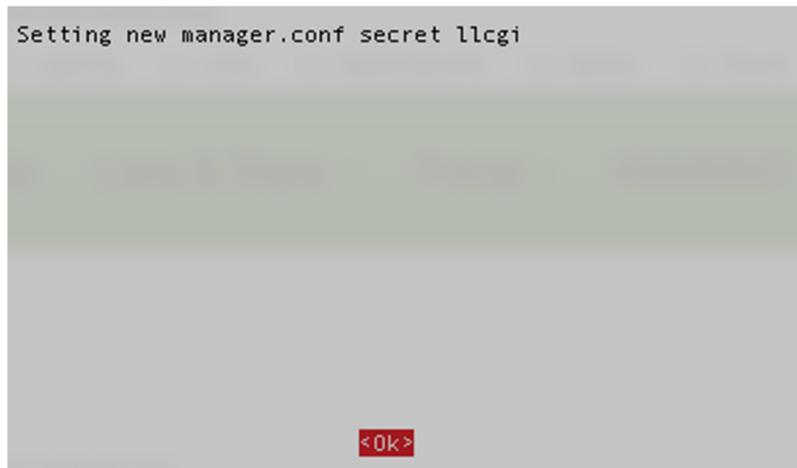
Choose option <N6>.



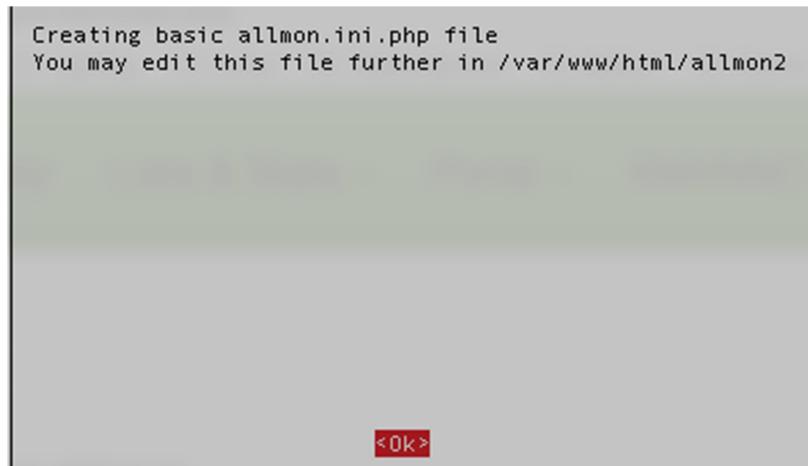
Type in your Allstarlink node Password to have access from the nodes web site Allmon2, the default password will be your AllStar node password'.



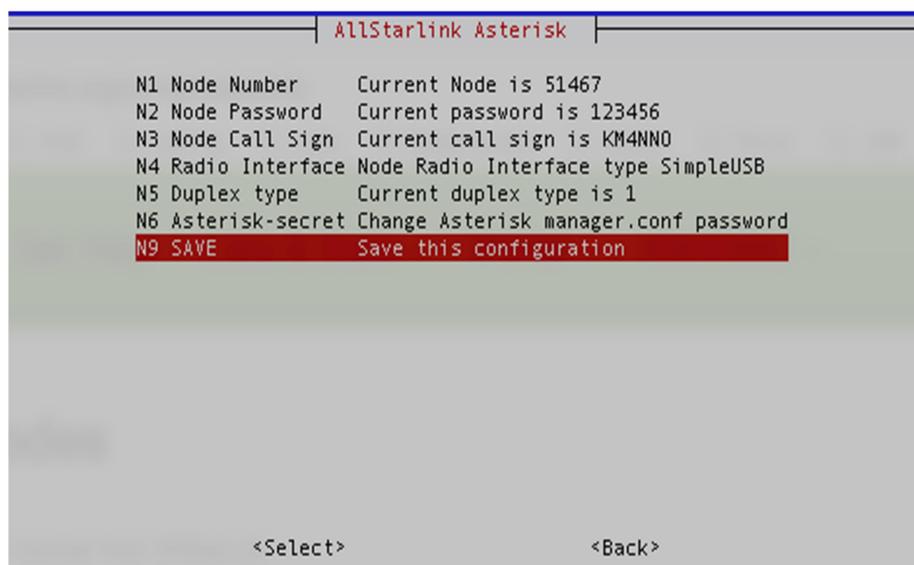
Just say **<Ok>** to this message.



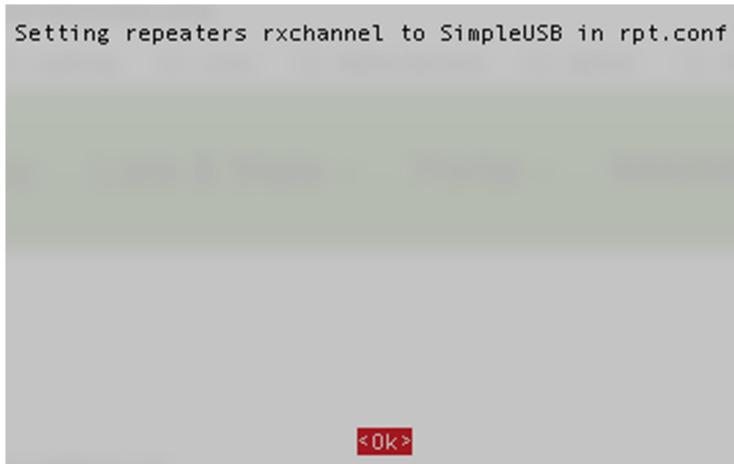
Just say **<Ok>** to this message.



Choose option <N9>.



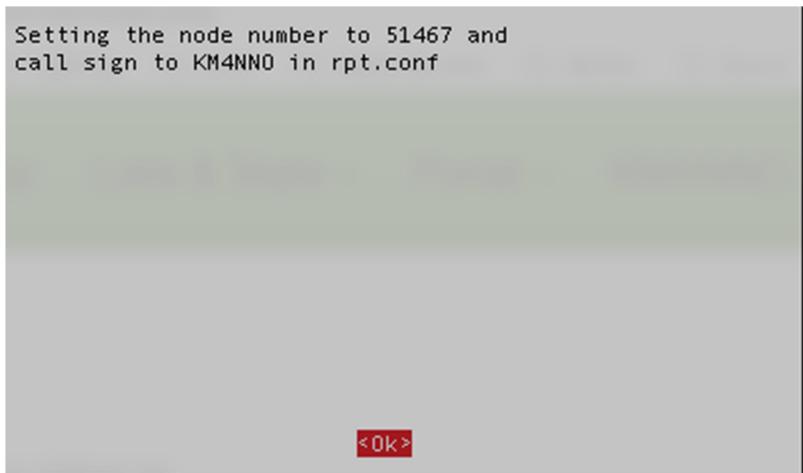
Just say <Ok> to this message.



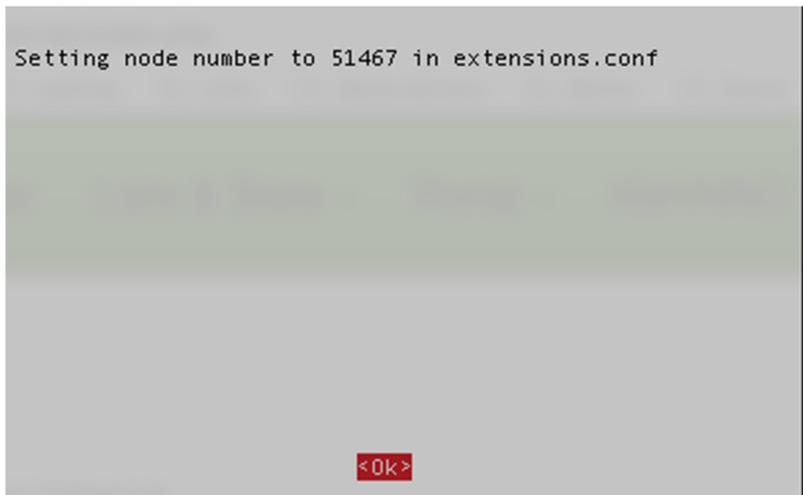
Just say **<Ok>** to this message.



Just say **<Ok>** to this message.



Just say **<Ok>** to this message.



Just say **<Ok>** to this message.



Just say **<Ok>** to this message.



Just say **<Ok>** to this message.

```
Node Number, Call Sign and the node password have been
saved in /tmp/FILENAME.conf.tmp
From the Main Menu Select (SAVE)
to Save changes and backup originals

<Ok>
```

Choose option **<Back>**.

```
AllStarlink Asterisk

N1 Node Number      Current Node is 51467
N2 Node Password    Current password is 123456
N3 Node Call Sign   Current call sign is KM4NNO
N4 Radio Interface  Node Radio Interface type SimpleUSB
N5 Duplex type      Current duplex type is 1
N6 Asterisk-secret  Change Asterisk manager.conf password
N9 SAVE             Save this configuration

<Select>           <Back>
```

Choose option **<AZ>**.

```
AllStarLink Asterisk

A1 Initial Node Setup      Node number, password, call sign
A2 Edit Echolink          Enable and Edit Echolink configur
A3 Enable savenode        Enables savenode.conf for node 51
A4 Quick backup           Copy existing files to folder /et
A5 Review                 Review of configuration settings
A0 About                  AllStarLink Asterisk
AZ SAVE                   Save configuration and make it li

<Select>                <Exit>
```

Review what you wrote down with what you have configured on your system and press **<Enter>**.

```
Node number to be used 51467
Registration password 123456
Call sign KM4NNO
Radio interface type SimpleUSB
Manager password llcgi

If you did not configure echolink then ignore these values.
Echolink call sign: INVALID
Asterisk node associated with echolink: 1999
Echolink node number: 000000
Echolink password: INVALID
Echolink owners name: YOUR NAME
Echolink QTH: INVALID ;
Echolink contact email: INVALID
Echolink Latitude: 0.0
Echolink Longitude: 0.0
Echolink Transmitter power value: 0
Echolink Antenna Height value: 0
Echolink Antenna Gain (db): 0
Echolink Repeater Frequency: 0.0
Echolink PL tone: 0.0
```

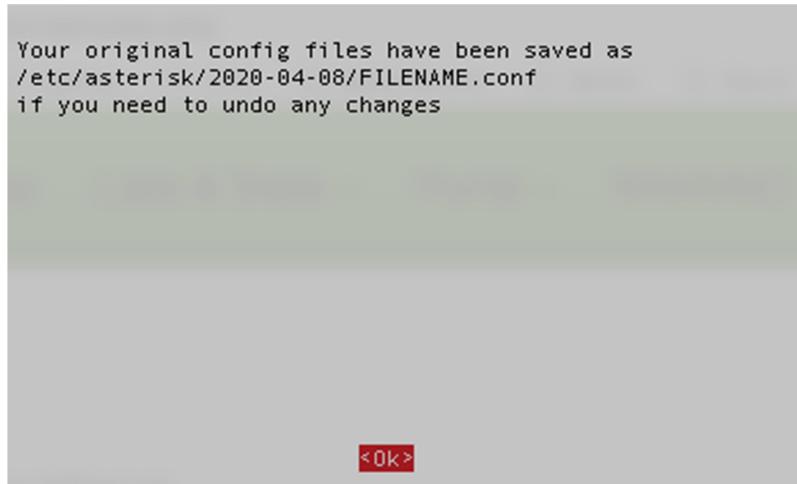
Choose **<Yes>** to backup your configuration.

```
Backup and save?

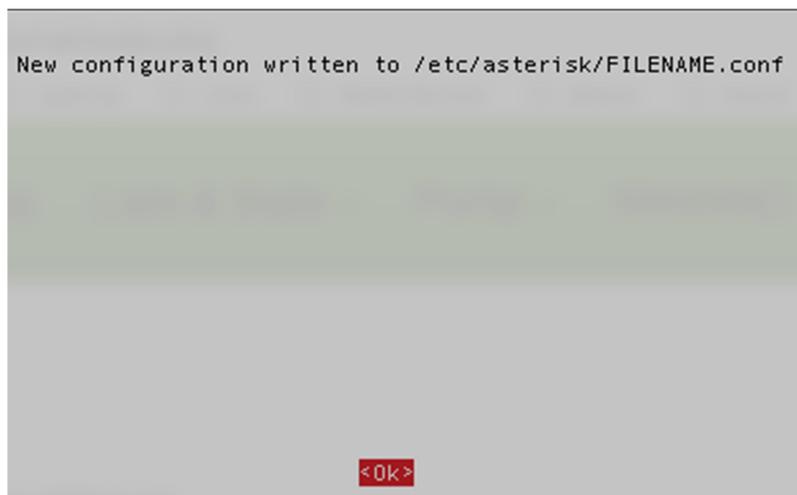
Backup originals and Save the New Configuration?

<Yes>                <No>
```

Just say <Ok> to this message.



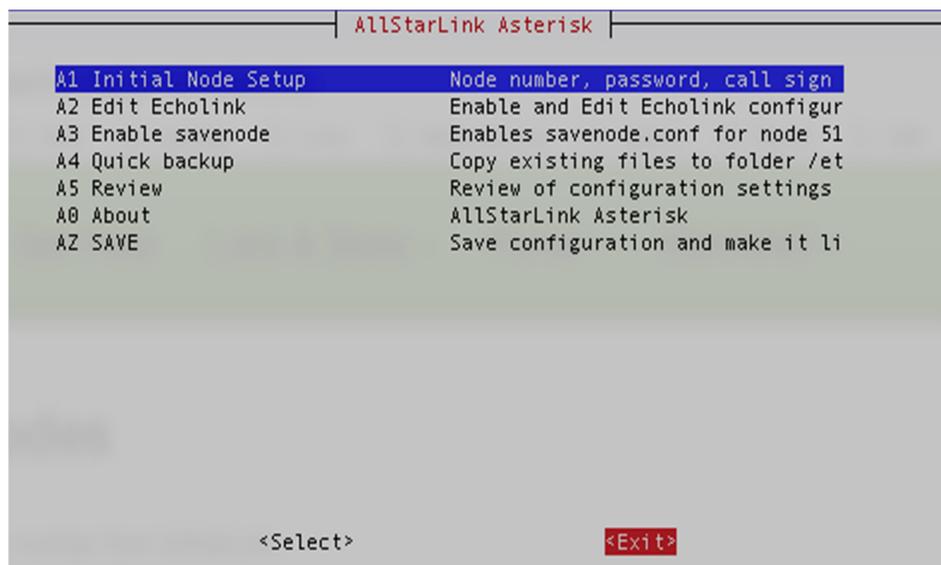
Just say <Ok> to this message.



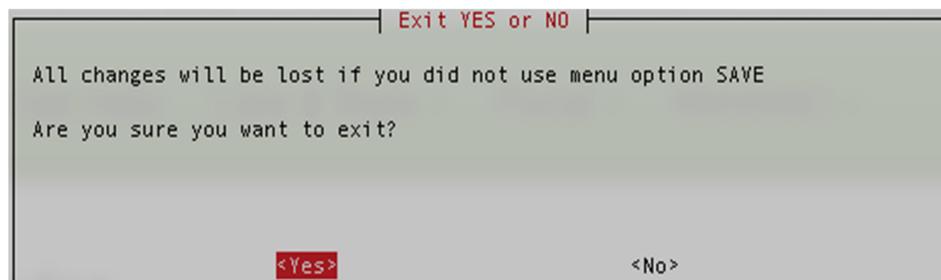
Just say <Ok> to this message.



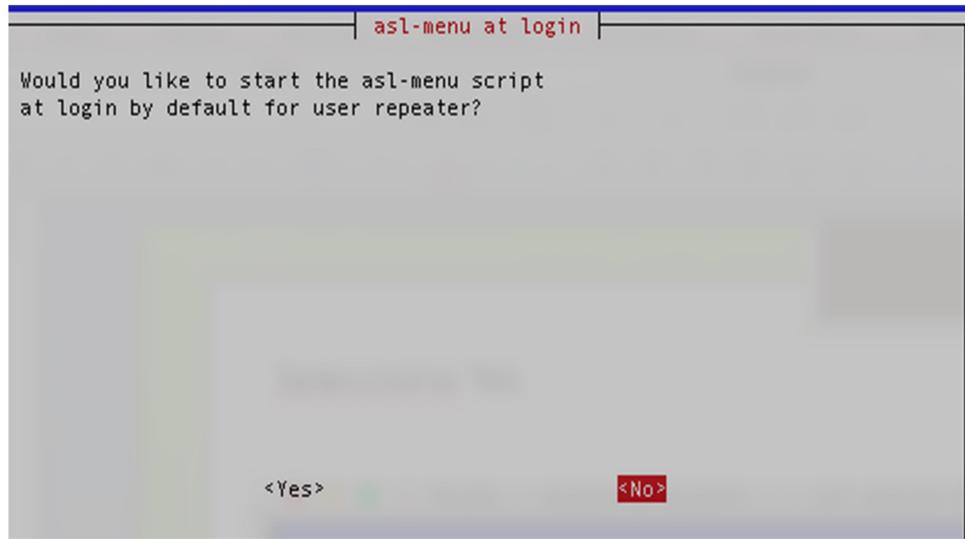
Choose option <Exit>.



Answer <Yes>, because we already saved our configuration.

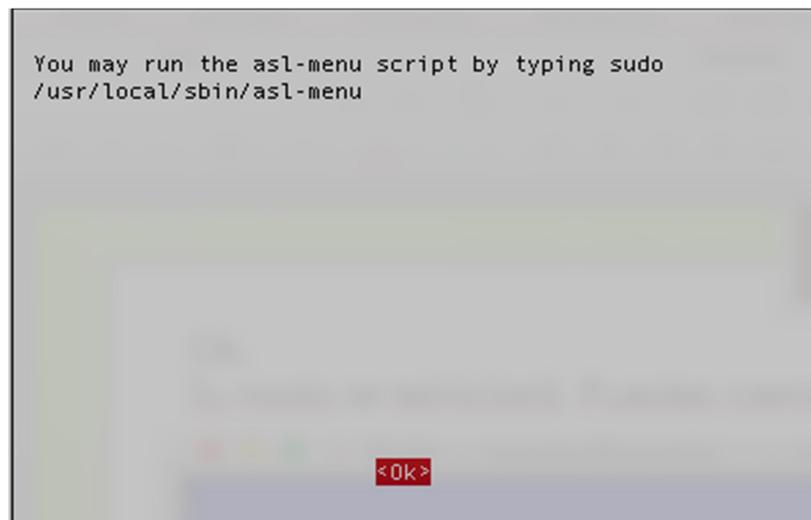


If you want to automatically start your system with this menu answer **<Yes>**, if not then **<No>**.

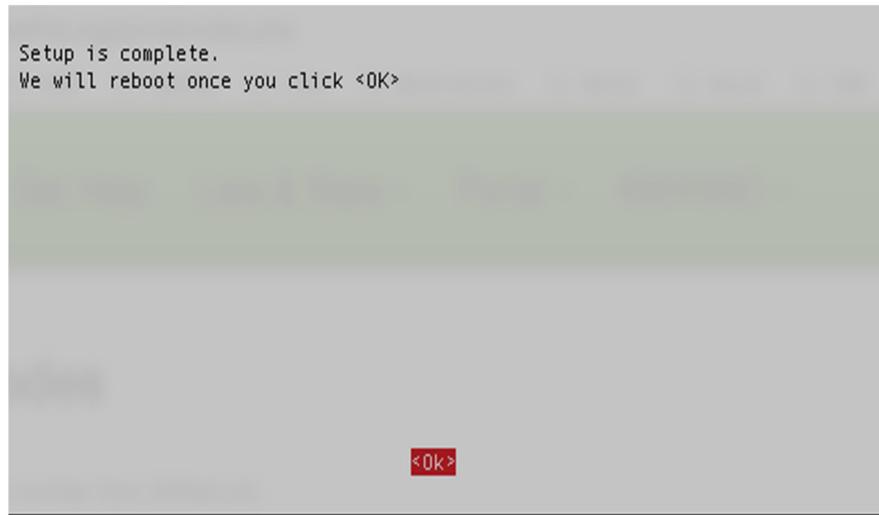


If your answer was **<No>**, remember you can come back to this menu typing **sudo asl-menu** as the following example:

```
repeater@repeater:~$ sudo asl-menu
```



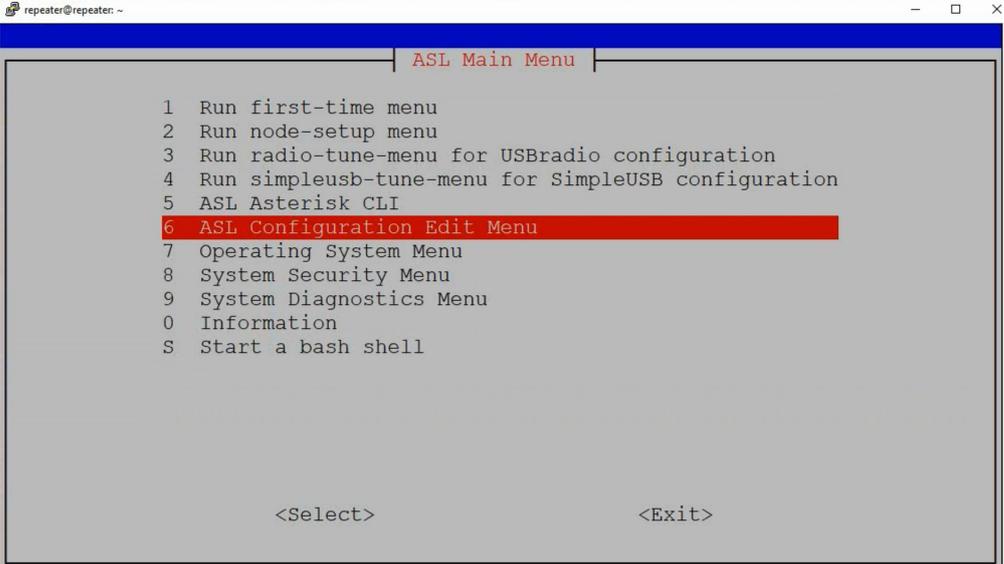
Now your node will reboot to apply all the changes we have done, so say **<Ok>**.



After Reboot open up a new terminal in putty and login, at the prompt type in `sudo -s`, then `asl-menu`.

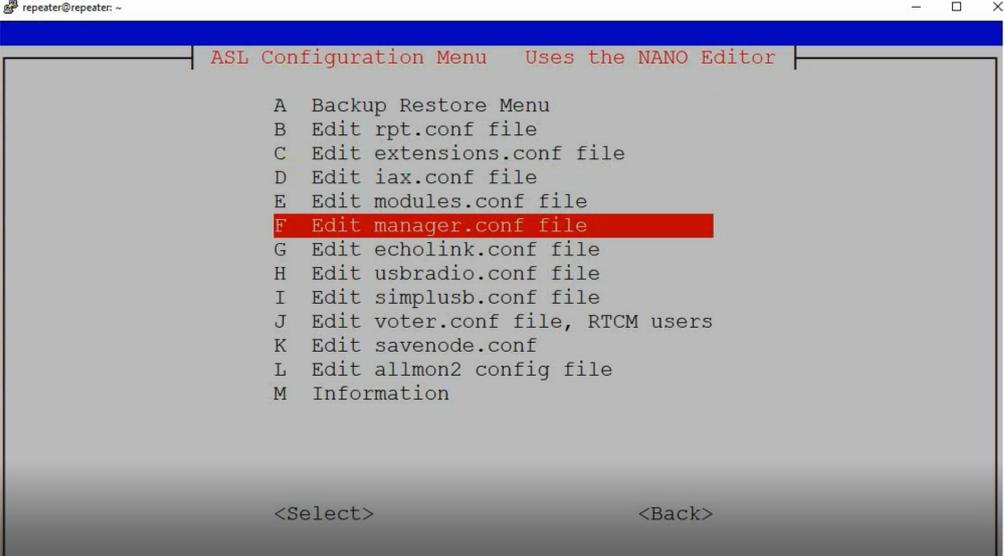
```
repeater@repeater: ~  
|  
| By: Jim WB6NIL (SK), Steve N4IRS, Adam KC1KCC, Rob KK9ROB, and others  
|  
| https://www.allstarlink.org  
|  
| (C) 1999 - 2005, Digium, Inc  
|  
| (C) 2018-2021 AllStarLink, Inc  
|  
|  
|-----|  
You may access this machine via SSH via the following hosts:  
repeater  
repeater.local  
192.168.0.21  
ASL Version 2.0.0-beta.6  
Last login: Thu Oct 21 19:17:16 2021 from 192.168.0.35  
repeater@repeater:~$ sudo -s  
root@repeater:/home/repeater# asl-menu
```

Choose option <6>



```
repeater@repeater: ~  
ASL Main Menu  
1 Run first-time menu  
2 Run node-setup menu  
3 Run radio-tune-menu for USBradio configuration  
4 Run simpleusb-tune-menu for SimpleUSB configuration  
5 ASL Asterisk CLI  
6 ASL Configuration Edit Menu  
7 Operating System Menu  
8 System Security Menu  
9 System Diagnostics Menu  
0 Information  
S Start a bash shell  
  
<Select> <Exit>
```

Select option <F>.



```
repeater@repeater: ~  
ASL Configuration Menu Uses the NANO Editor  
A Backup Restore Menu  
B Edit rpt.conf file  
C Edit extensions.conf file  
D Edit iax.conf file  
E Edit modules.conf file  
F Edit manager.conf file  
G Edit echolink.conf file  
H Edit usbradio.conf file  
I Edit simpleusb.conf file  
J Edit voter.conf file, RTCM users  
K Edit savenode.conf  
L Edit allmon2 config file  
M Information  
  
<Select> <Back>
```

```
repeater@repeater: ~
GNU nano 3.2 /etc/asterisk/manager.conf
;
; Asterisk Call Management support
;
; By default asterisk will listen on localhost only.
[general]
enabled = yes
port = 5038
bindaddr = 127.0.0.1

[admin]
secret = aGR2GF5VfQu7Nvh
read = all,system,call,log,verbose,command,agent,user,config
write = all,system,call,log,verbose,command,agent,user,config

Read 14 lines
Get Help Write Out Where Is Cut Text Justify Cur Pos
Exit Read File Replace Uncut Text To Spell Go To Line
```

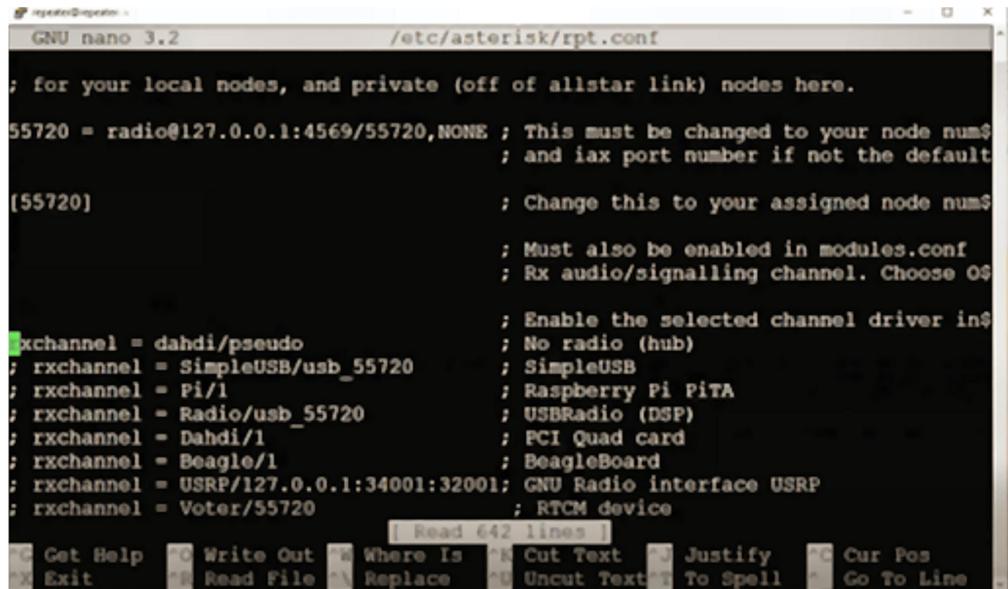
Change secret =aGR2GF5VfQu7Nvh to your node password.

Ctrl X, Yes and exit to save. Now select option .

```
repeater@repeater: ~
ASL Configuration Menu Uses the NANO Editor
A Backup Restore Menu
B Edit rpt.conf file
C Edit extensions.conf file
D Edit iax.conf file
E Edit modules.conf file
F Edit manager.conf file
G Edit echolink.conf file
H Edit usbradio.conf file
I Edit simplusb.conf file
J Edit voter.conf file, RTCM users
K Edit savenode.conf
L Edit allmon2 config file
M Information

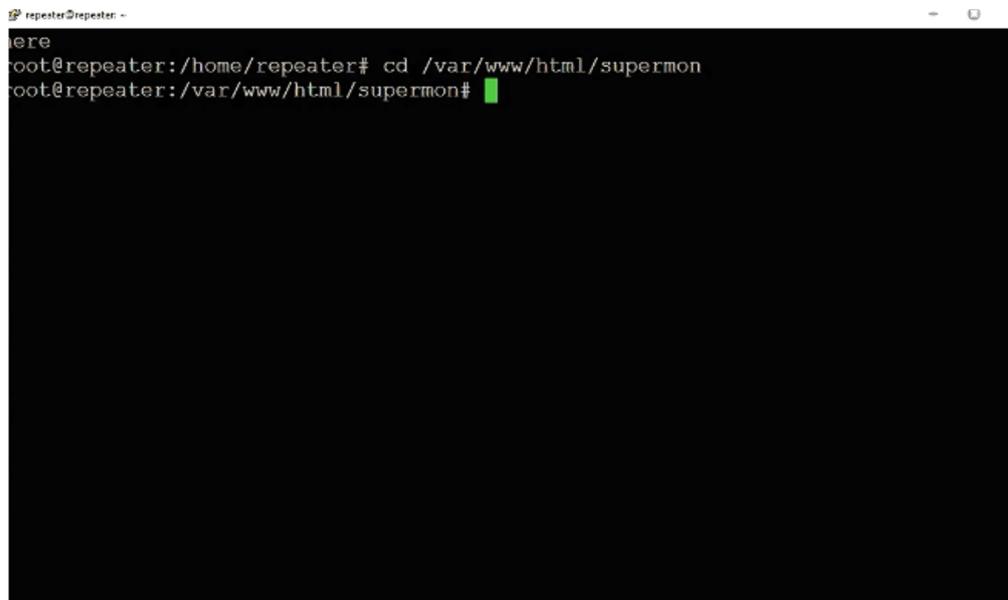
<Select> <Back>
```

put semicolon in front of `rxchannel = dahdi/psuedo`



```
GNU nano 3.2 /etc/asterisk/rpt.conf
; for your local nodes, and private (off of allstar link) nodes here.
55720 = radio@127.0.0.1:4569/55720,NONE ; This must be changed to your node num$
; and iax port number if not the default
[55720] ; Change this to your assigned node num$
; Must also be enabled in modules.conf
; Rx audio/signalling channel. Choose O$
; Enable the selected channel driver in$
; No radio (hub)
; SimpleUSB
; Raspberry Pi PiTA
; USBRadio (DSP)
; PCI Quad card
; BeagleBoard
; GNU Radio interface USRP
; RTCM device
rxchannel = dahdi/psuedo
; rxchannel = SimpleUSB/usb_55720
; rxchannel = Pi/1
; rxchannel = Radio/usb_55720
; rxchannel = Dahdi/1
; rxchannel = Beagle/1
; rxchannel = USRP/127.0.0.1:34001:32001
; rxchannel = Voter/55720
Read 642 lines
Get Help Write Out Where Is Cut Text Justify Cur Pos
Exit Read File Replace Uncut Text To Spell Go To Line
```

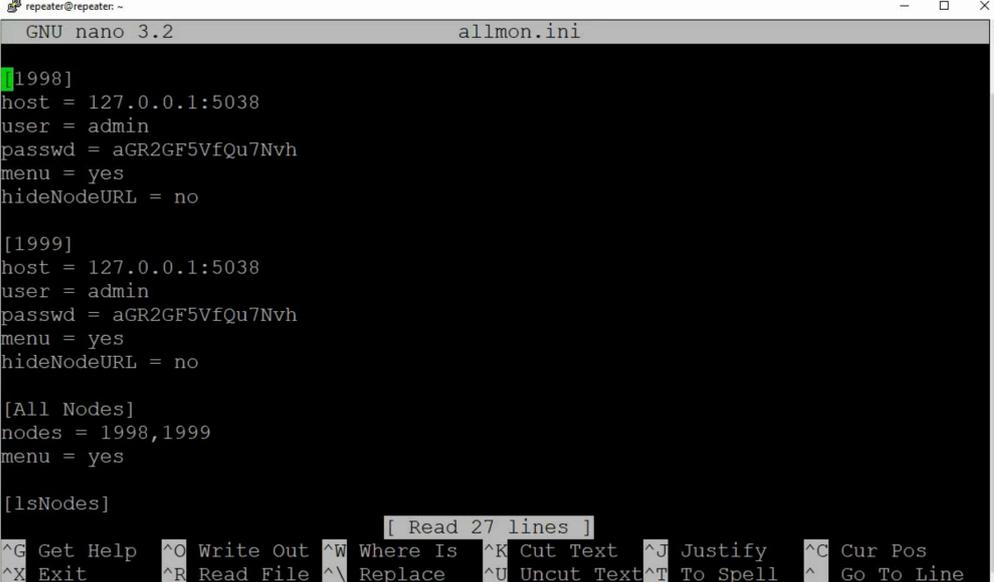
remove semicolon from `RX channel = USRP/127.0.0.1`, CTRL X, save and Exit and then Exit asl-menu.



```
repeater@repeater -
ere
root@repeater:/home/repeater# cd /var/www/html/supermon
root@repeater:/var/www/html/supermon#
```

At prompt `cd /var/www/html/supermon`.

Then **nano allmon.ini**, change [1998] to [your node number] and change **passwd = aGR2GF5VfQu7Nvh** to your node **passwd**.



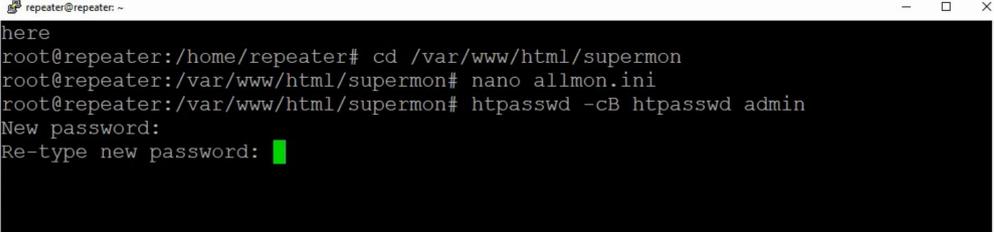
```
repeater@repeater: ~
GNU nano 3.2 allmon.ini
[1998]
host = 127.0.0.1:5038
user = admin
passwd = aGR2GF5VfQu7Nvh
menu = yes
hideNodeURL = no

[1999]
host = 127.0.0.1:5038
user = admin
passwd = aGR2GF5VfQu7Nvh
menu = yes
hideNodeURL = no

[All Nodes]
nodes = 1998,1999
menu = yes

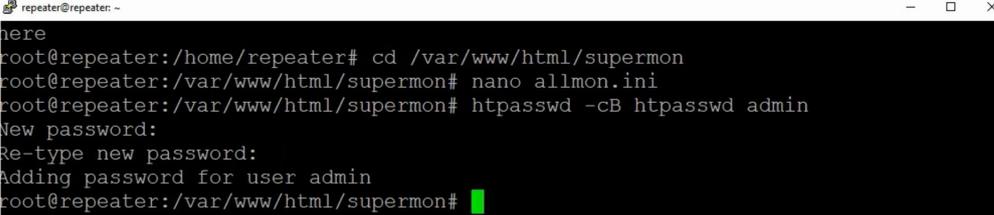
[lsNodes]
[ Read 27 lines ]
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

CTRL-X, save and exit. Type in terminal **cd ..**



```
repeater@repeater: ~
here
root@repeater:/home/repeater# cd /var/www/html/supermon
root@repeater:/var/www/html/supermon# nano allmon.ini
root@repeater:/var/www/html/supermon# htpasswd -cB htpasswd admin
New password:
Re-type new password:
```

Type in **htpasswd -cB .htpasswd admin**. Then at the prompt type in your node password, and then type it again to confirm.

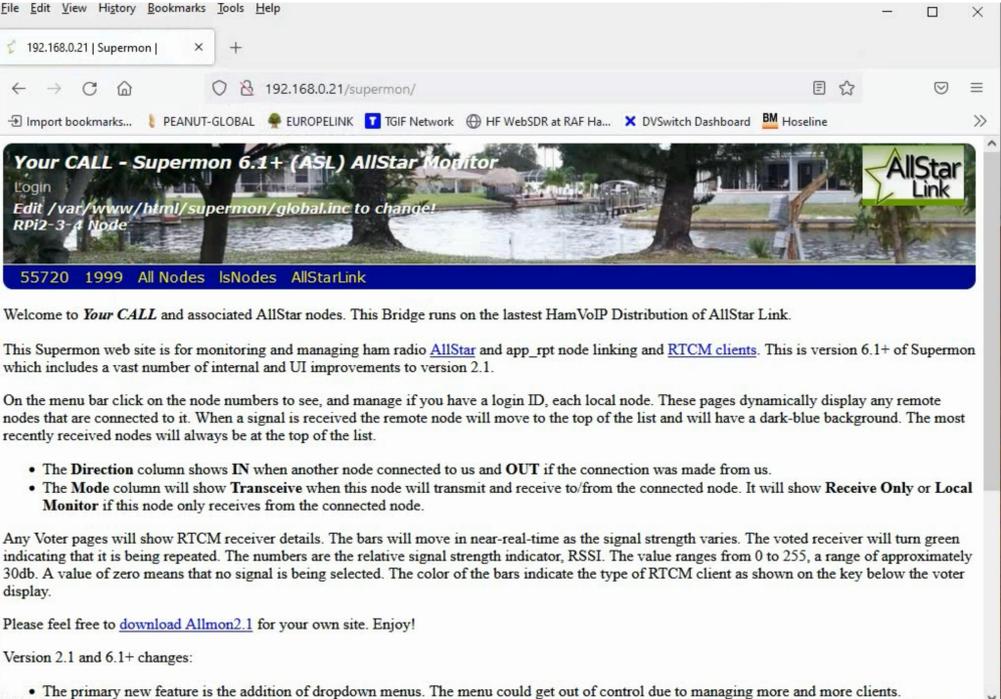


```
repeater@repeater: ~
here
root@repeater:/home/repeater# cd /var/www/html/supermon
root@repeater:/var/www/html/supermon# nano allmon.ini
root@repeater:/var/www/html/supermon# htpasswd -cB htpasswd admin
New password:
Re-type new password:
Adding password for user admin
root@repeater:/var/www/html/supermon#
```

Type in terminal `cd ..` then `cd allmon2` then type in the command `./astdb.php`

```
Re-type new password:
Adding password for user admin
root@repeater:/var/www/html/supermon# cd ..
root@repeater:/var/www/html# cd allmon2
root@repeater:/var/www/html/allmon2# ./astdb.php
```

Now open up a web browser to the IP address of your raspberry pi. i.e <http://192.168.0.55/supermon>



File Edit View History Bookmarks Tools Help

192.168.0.21 | Supermon | x +

192.168.0.21/supermon/

Import bookmarks... PEANUT-GLOBAL EUROPELINK TGIF Network HF WebSDR at RAF Ha... DVSwitch Dashboard BM Hoseline

Your CALL - Supermon 6.1+ (ASL) AllStar Monitor

Login

Edit /var/www/html/supermon/global.inc to change!

RPI2-3-4 Node

55720 1999 All Nodes IsNodes AllStarLink

Welcome to **Your CALL** and associated AllStar nodes. This Bridge runs on the latest HamVoIP Distribution of AllStar Link.

This Supermon web site is for monitoring and managing ham radio [AllStar](#) and [app_rpt](#) node linking and [RTCM clients](#). This is version 6.1+ of Supermon which includes a vast number of internal and UI improvements to version 2.1.

On the menu bar click on the node numbers to see, and manage if you have a login ID, each local node. These pages dynamically display any remote nodes that are connected to it. When a signal is received the remote node will move to the top of the list and will have a dark-blue background. The most recently received nodes will always be at the top of the list.

- The **Direction** column shows **IN** when another node connected to us and **OUT** if the connection was made from us.
- The **Mode** column will show **Transceive** when this node will transmit and receive to/from the connected node. It will show **Receive Only** or **Local Monitor** if this node only receives from the connected node.

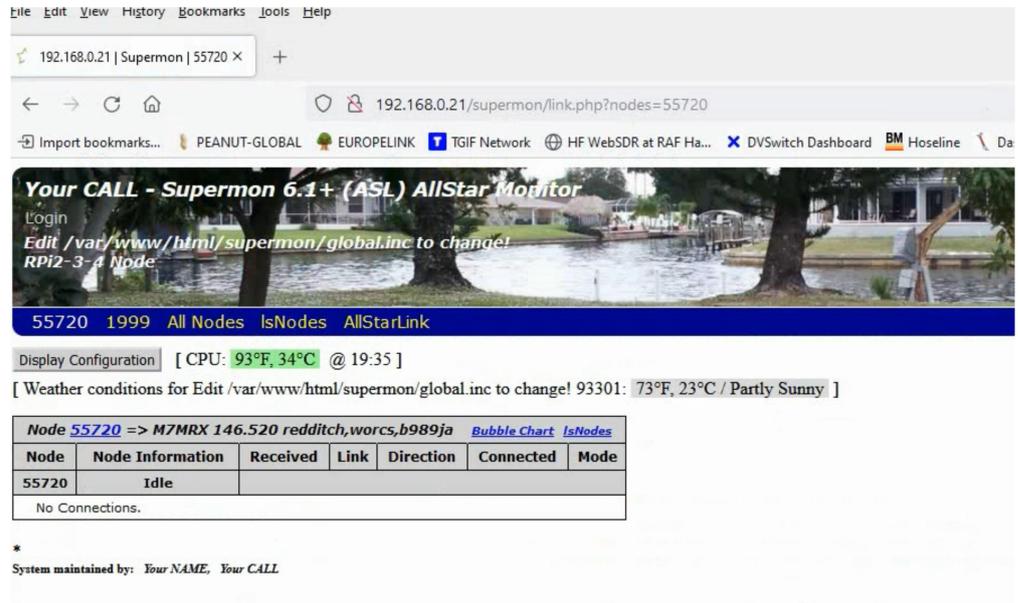
Any Voter pages will show RTCM receiver details. The bars will move in near-real-time as the signal strength varies. The voted receiver will turn green indicating that it is being repeated. The numbers are the relative signal strength indicator, RSSI. The value ranges from 0 to 255, a range of approximately 30db. A value of zero means that no signal is being selected. The color of the bars indicate the type of RTCM client as shown on the key below the voter display.

Please feel free to [download Allmon2.1](#) for your own site. Enjoy!

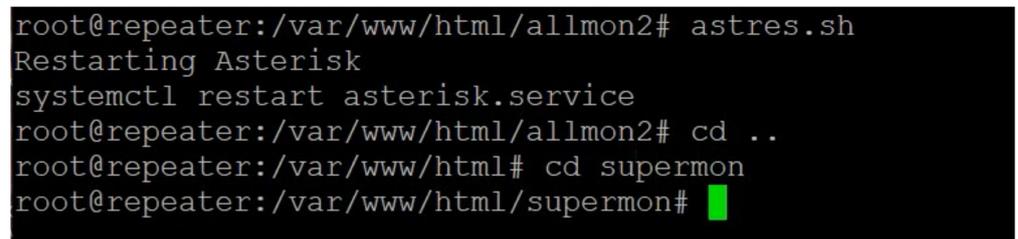
Version 2.1 and 6.1+ changes:

- The primary new feature is the addition of dropdown menus. The menu could get out of control due to managing more and more clients.

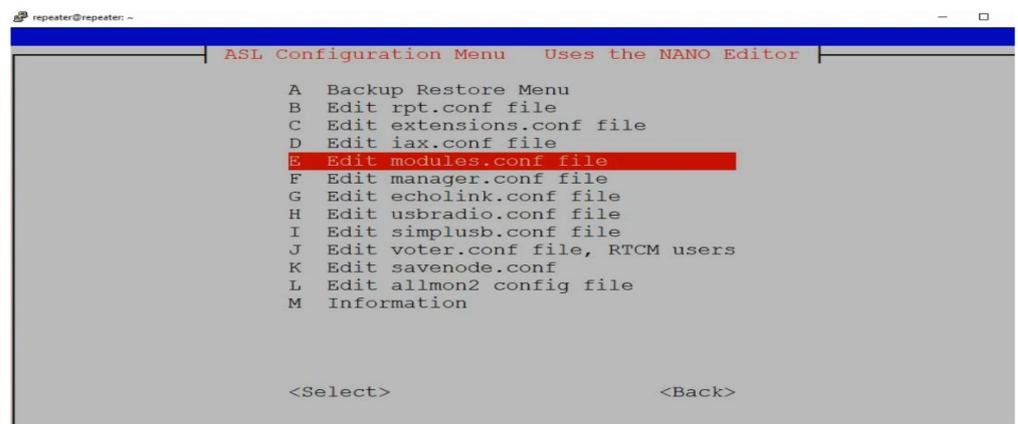
Login with admin, and your node password or just click on your node number.



In the terminal, type `astres.sh` to restart the asterisk service.



Then type `asl-menu` and select `asl configuration menu` then select option `<E>`.



Scroll down to ;Channels

```
repeater@repeater: ~
GNU nano 3.2 /etc/asterisk/modules.conf

no load => chan_agent.so ; Agent Proxy Channel
no load => chan_alsa.so ; ALSA Console Channel Driver
no load => chan_beagle.so ; Beagleboard Radio Interface Cha$
load => chan_dahdi.so ; DAHDI Telephony
no load => chan_echolink.so ; echolink Channel Driver
no load => chan_features.so ; Feature Proxy Channel
no load => chan_gtalk.so ; Gtalk Channel Driver
load => chan_iax2.so ; Inter Asterisk eXchange (Ver 2)
load => chan_local.so ; Local Proxy Channel (Note: used$
no load => chan_oss.so ; Channel driver for OSS sound ca$
no load => chan_phone.so ; Generic Linux Telephony Interfa$
no load => chan_pi.so ; DMK Engineering "PITA" Board on$
load => chan_simpleusb.so ; CMLxx USB Cards with Radio Inte$
no load => chan_sip.so ; Session Initiation Protocol (SI$
no load => chan_tlb.so ; TheLinkBox Channel Driver
no load => chan_usbradio.so ; CMLxx USB Cards with Radio Inte$
no load => chan_usrp.so ; GNU Radio interface USRP Channe$
no load => chan_voter.so ; Radio Voter Channel Driver

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

Remove the **no** from **no load => chan_usrp.so**, the CTRL-X save and exit. then exit asl-menu to get back to command line. Type in **cd /tmp**. Now we will install DVSWitch. First type in the terminal **wget <http://dvswitch.org/buster>**

```
root@repeater:/tmp# wget http://dvswitch.org/buster
--2021-10-21 19:46:08-- http://dvswitch.org/buster
Resolving dvswitch.org (dvswitch.org)... 44.103.34.4
Connecting to dvswitch.org (dvswitch.org)|44.103.34.4|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1831 (1.8K)
Saving to: 'buster'

buster 100%[=====>] 1.79K --.-KB/s in 0s
2021-10-21 19:46:08 (27.1 MB/s) - 'buster' saved [1831/1831]
```

The type in **chmod +x buster** followed by **sudo ./buster**.

```
root@repeater:/tmp# chmod +x buster
root@repeater:/tmp# ./buster
--2021-10-21 19:46:21-- http://dvswitch.org/DVSwitch_Repository/dvswitch.gpg.k
y
Resolving dvswitch.org (dvswitch.org)... 44.103.34.4
Connecting to dvswitch.org (dvswitch.org)|44.103.34.4|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1678 (1.6K) [application/pgp-keys]
Saving to: 'STDOUT'

- 100%[=====>] 1.64K --.-KB/s in 0s
2021-10-21 19:46:22 (22.7 MB/s) - written to stdout [1678/1678]
```

Now before we carry on and install DVSwitch, we will do an update, so type in at prompt **apt update** be warned this can take a while so get yourself a pint of beer and sit back. Oh and press y at any prompts.

```
root@repeater:/tmp# apt update
Hit:1 http://archive.raspberrypi.org/debian buster InRelease
Get:2 http://raspbian.raspberrypi.org/raspbian buster InRelease [15.0 kB]
Hit:3 http://dvswitch.org/DVSwitch_Repository buster InRelease
Get:4 http://apt.allstarlink.org/repos/asl_builds buster InRelease [7392 B]
E: Repository 'http://raspbian.raspberrypi.org/raspbian buster InRelease' changed its 'Suite' value from 'stable' to 'oldstable'
N: This must be accepted explicitly before updates for this repository can be applied. See apt-secure(8) manpage for details.
Do you want to accept these changes and continue updating from this repository? [y/N]
```

At prompt type in **apt-get install -y dvswitch-server** and sit back and watch the show.

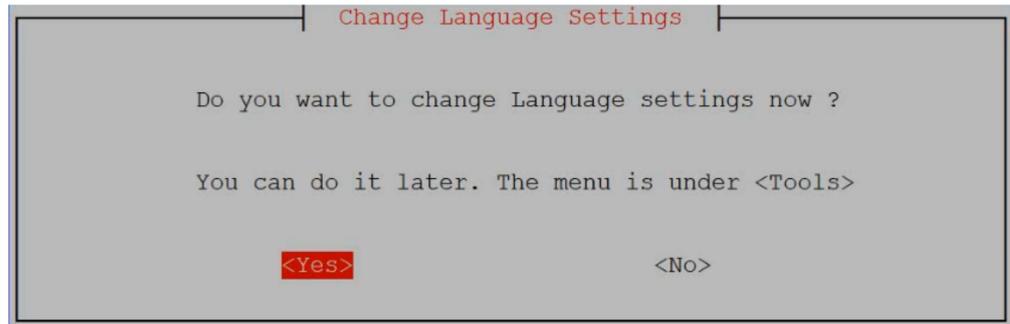
```
root@repeater:/tmp# apt-get install -y dvswitch-server
E: Invalid operation get
root@repeater:/tmp# apt-get install -y dvswitch-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

This continues for about 5 mins.

```
Creating config file /etc/php/7.3/cgi/php.ini with new version
Setting up ircddbgateway (20201028-17) ...
Created symlink /etc/systemd/system/multi-user.target.wants/ircddbgatewayd.service → /lib/systemd/system/ircddbgatewayd.service.
Setting up libapache2-mod-php7.3 (7.3.29-1~deb10u1) ...
libapache2-mod-php7.3: not switching MPM - already enabled
Setting up node-tinycolor (0.0.1-1) ...
Setting up node-ws (1.1.0+ds1.e6dda4e4-5+deb10u1) ...
Setting up dvswitch-dashboard (1.6.0-20210301-79) ...
Created symlink /etc/systemd/system/multi-user.target.wants/webproxy.service → /lib/systemd/system/webproxy.service.
Setting up php-cgi (2:7.3+69) ...
Setting up dvswitch (1.6.0-20201029-13) ...
Setting up dvswitch-server (1.6.0-20201029-7) ...
Processing triggers for systemd (241-7~deb10u6+rpil) ...
Processing triggers for man-db (2.8.5-2) ...
Processing triggers for libc-bin (2.28-10+rpil) ...
root@repeater:/tmp#
```

```
root@repeater:/tmp# cd /usr/local/dvs
root@repeater:/usr/local/dvs# ./dvs
```

At the prompt type in `cd /usr/local/dvs` then the command `./dvs` to enter the dvswitch menu. First you will be asked if you want to change the language select **<OK>**.



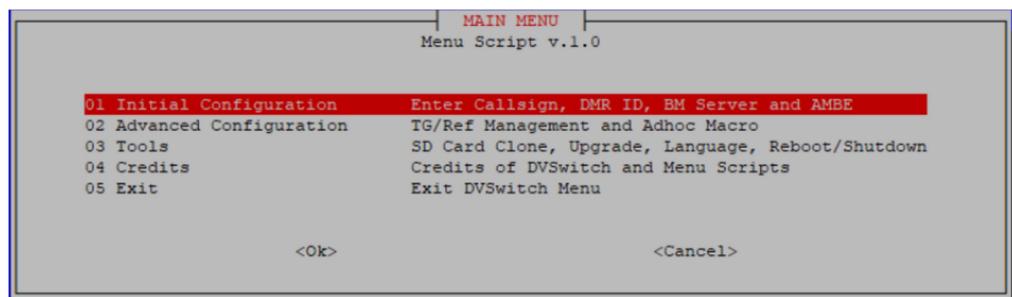
Select English and **<OK>**



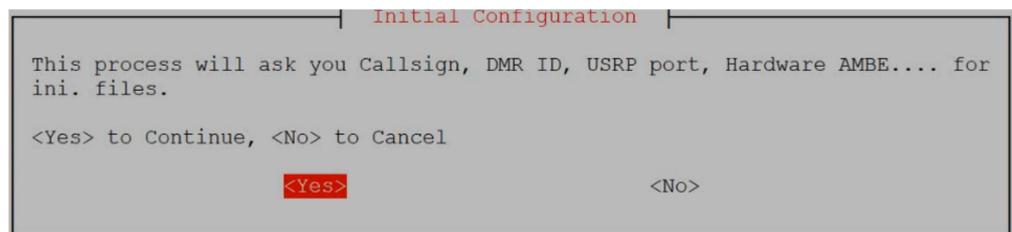
Select <OK>



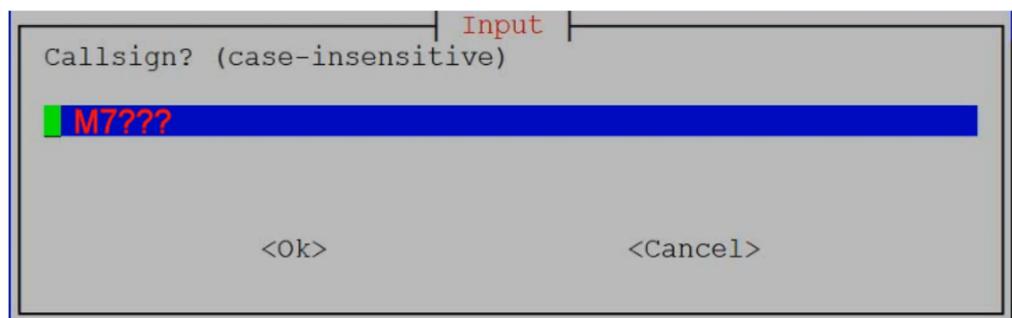
Select Option <01>



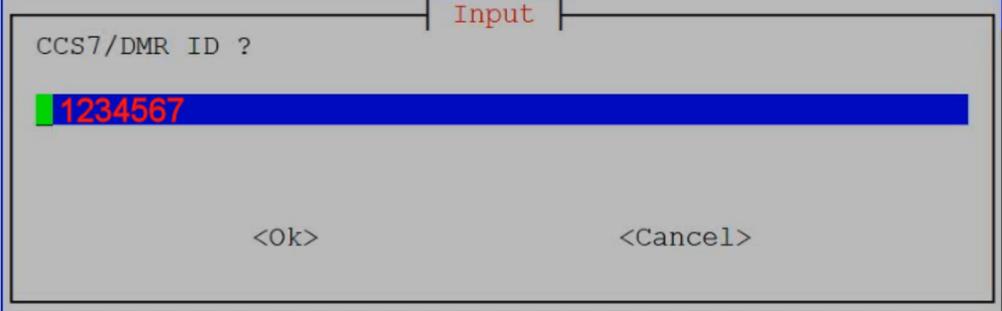
Select <Yes>



Enter Call Sign and select <OK>



Enter your dmrID and select **<OK>**



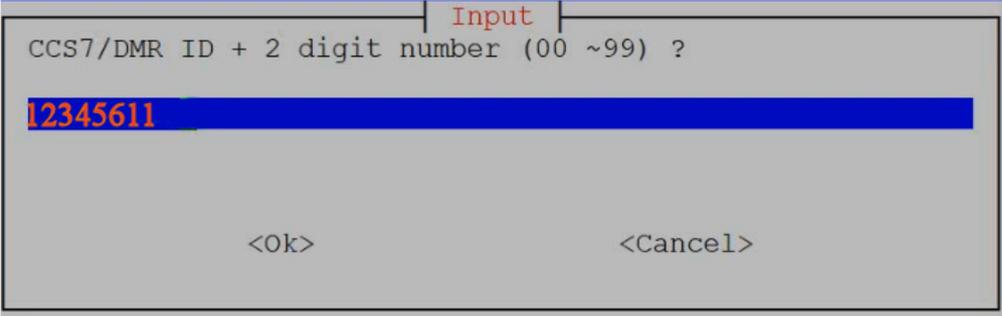
Input

CCS7/DMR ID ?

1234567

<Ok> <Cancel>

Your DMRID will appear again with a 2 digit suffix on the end you can change this number to anything between 0 and 99, I usually leave it to default unless you are going to use 1 or more servers.



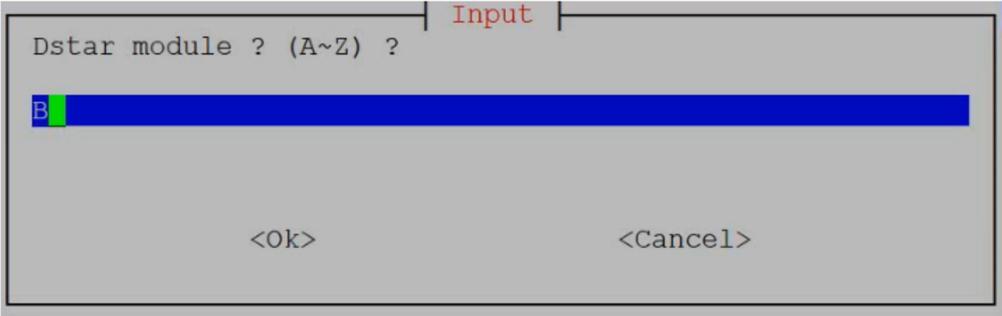
Input

CCS7/DMR ID + 2 digit number (00 ~99) ?

12345611

<Ok> <Cancel>

Leave Dstar module at default and Select **<OK>**.



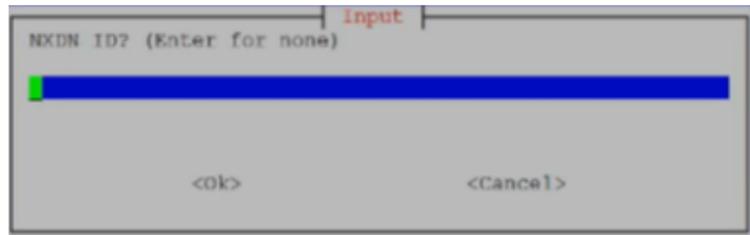
Input

Dstar module ? (A~Z) ?

B

<Ok> <Cancel>

Select <OK>

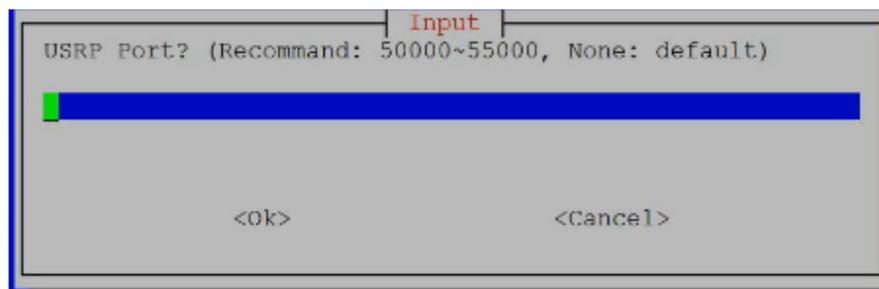


Input

NXDN ID? (Enter for none)

<ok> <Cancel>

Enter 52424 and Select <OK>



Input

USRP Port? (Recommand: 50000~55000, None: default)

<ok> <Cancel>

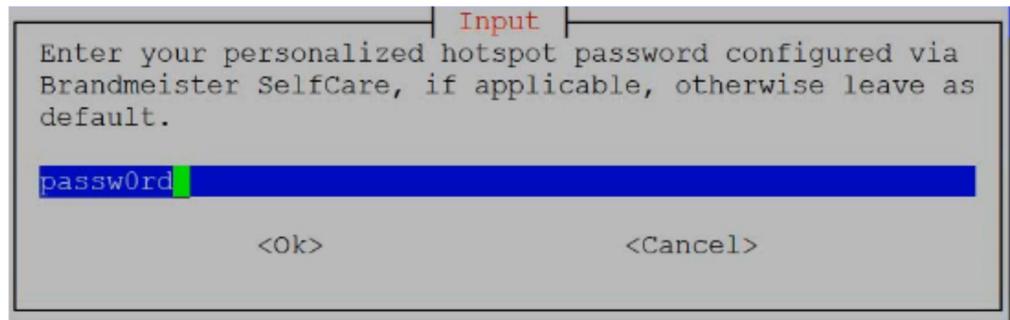
Now Choose Your local BrandMiester Server



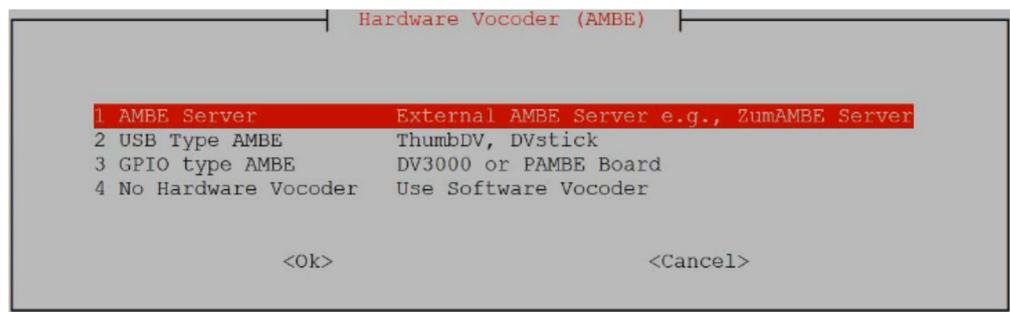
Choose your local BM Server

- 1 BM_2001_Europe_HAMNET
- 2 BM_2001_Europe
- 3 BM_2021_Greece
- 4 BM_2042_Netherlands
- 5 BM_2061_Belgium
- 6 BM_2081_France
- 7 BM_2082_France
- 8 BM_2141_Spain
- 9 BM_2162_Hungary
- 10 BM_2222_Italy
- 11 BM_2262_Romania
- 12 BM_2281_Switzerland
- 13 BM_2302_Czech_Republic
- 14 BM_2321_Austria
- 15 BM_2341 United Kingdom**
- 16 BM_2381_Denmark
- 17 BM_2401_Sweden
- 18 BM_2421_Norway
- 19 BM_2441_Finland
- 20 BM_2502_Russia

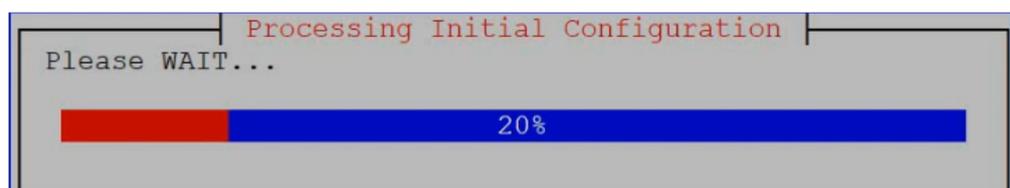
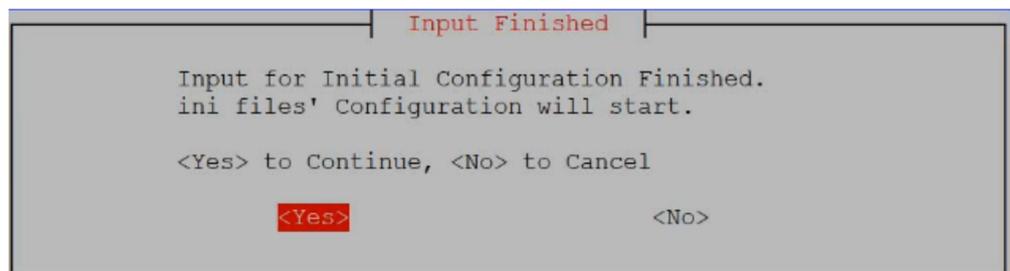
Enter ok for default unless you have setup your own password in selfcare, when complete Select **<OK>**



Choose Option **<4>** and Select **<OK>**



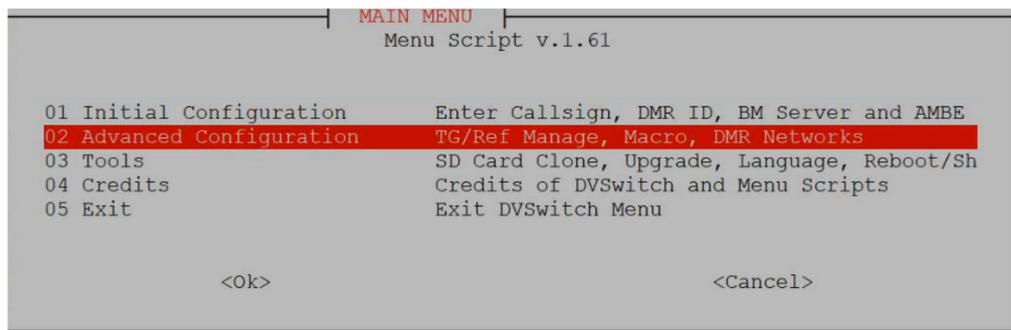
Select **<Yes>** to save your options.



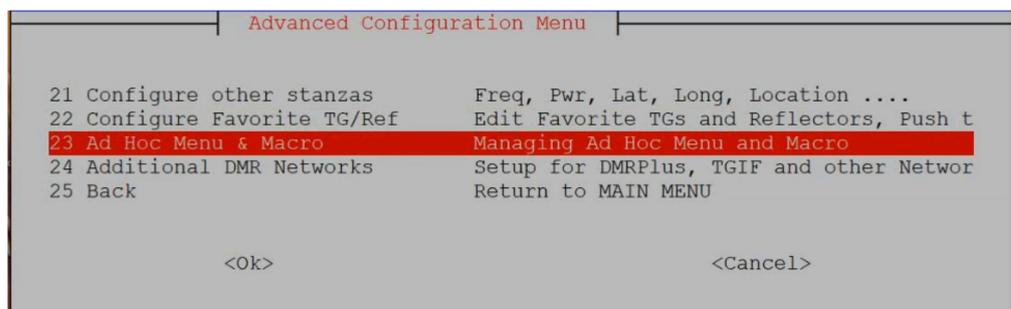
Select **<OK>** to return to Main Menu.



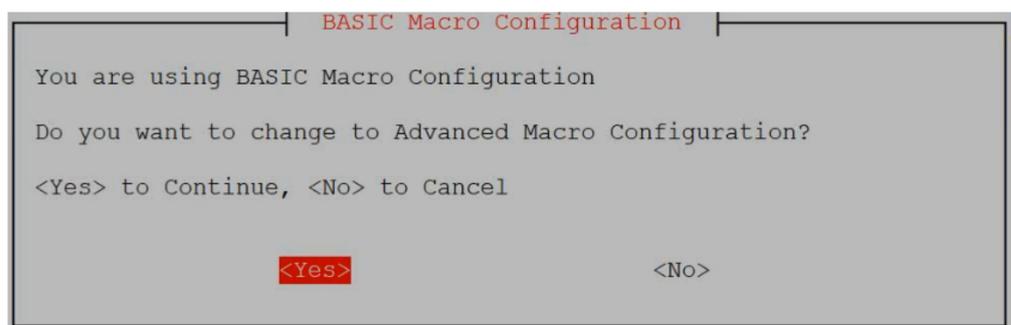
Choose Option **<2>**



Choose Option **<23>** and select **<OK>**



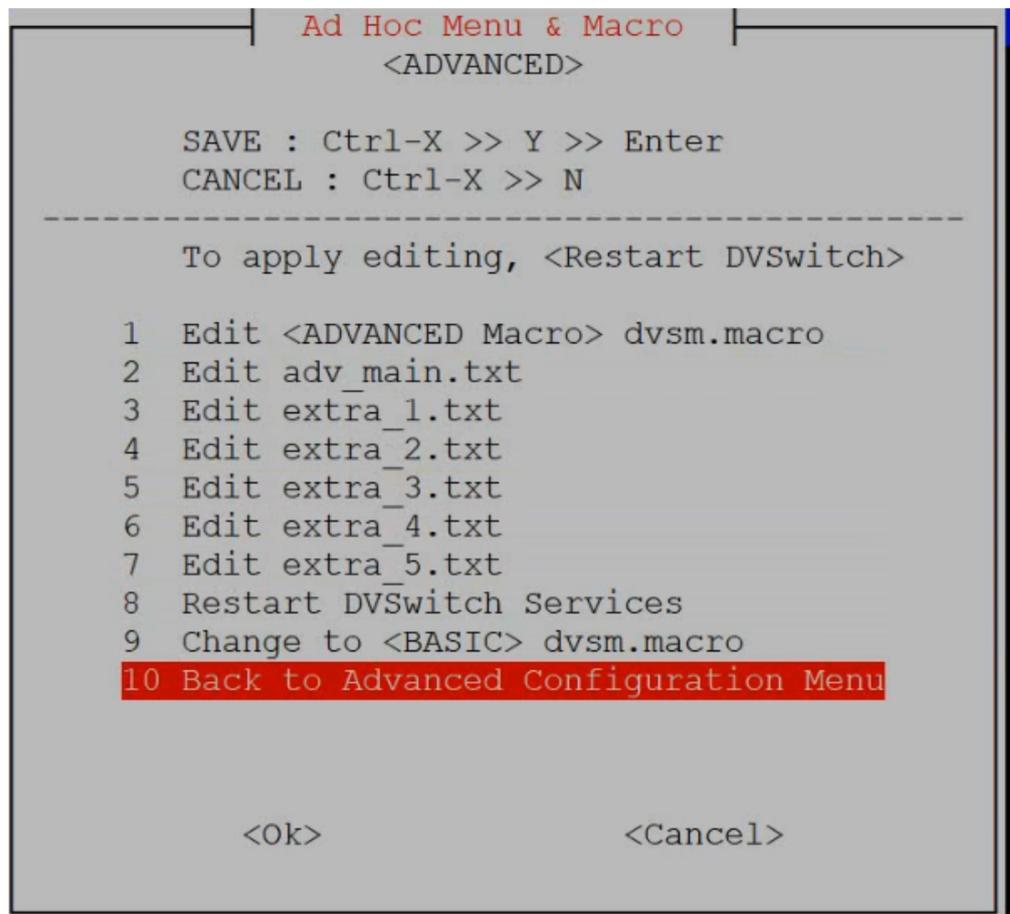
Select **<Yes>**



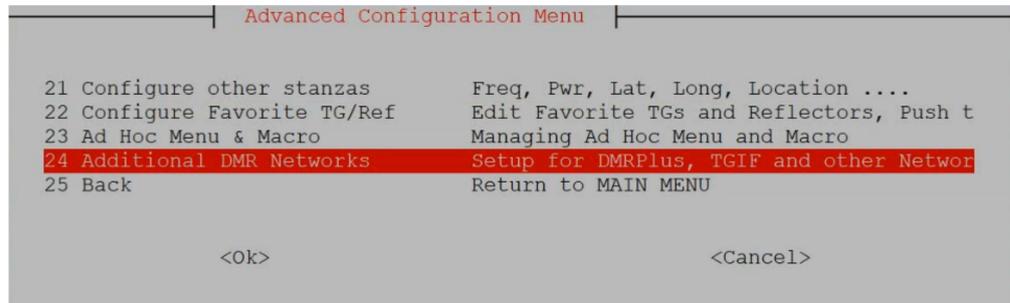
Select <Ok>



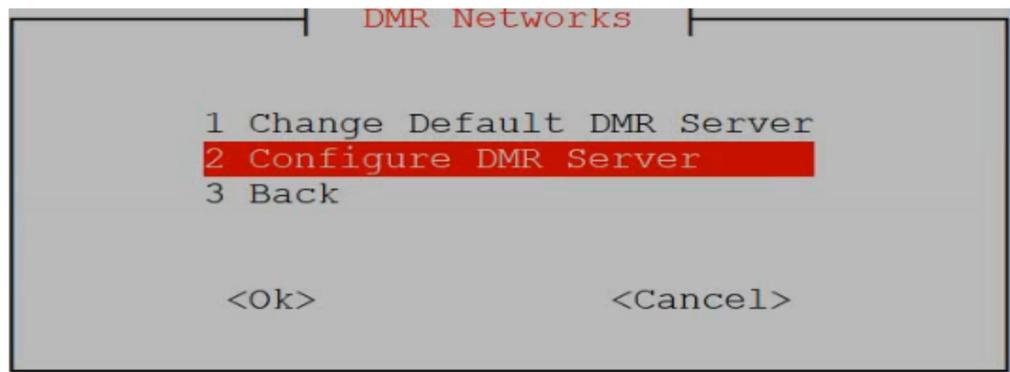
Select Option <10> and select <OK>



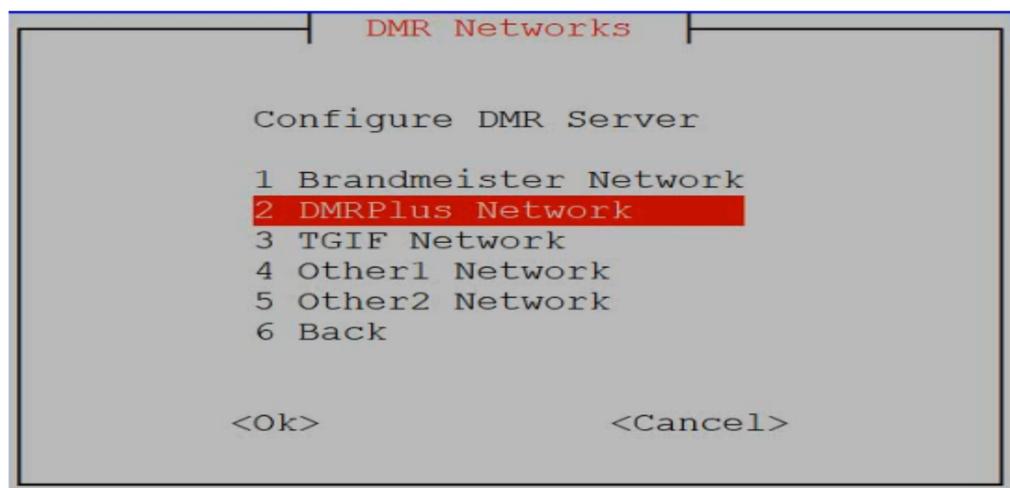
Select Option <24>



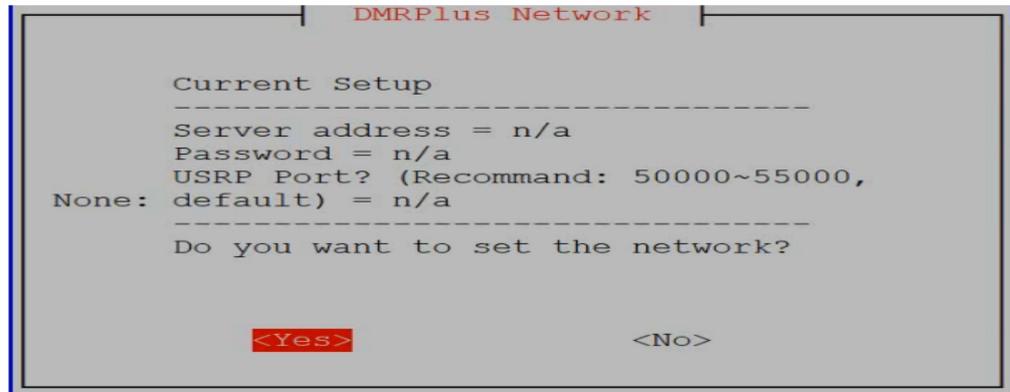
Select Option <2>



Now because we set up the BrandMeister network up in the initial configuration we don't need to touch it so select Option <2> and select <OK>



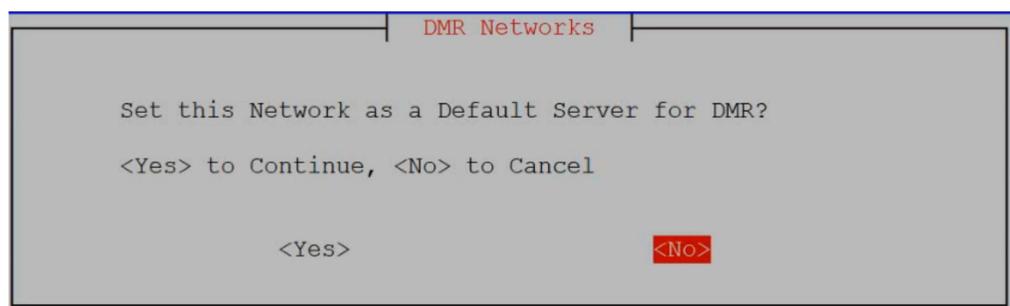
Select <Yes>



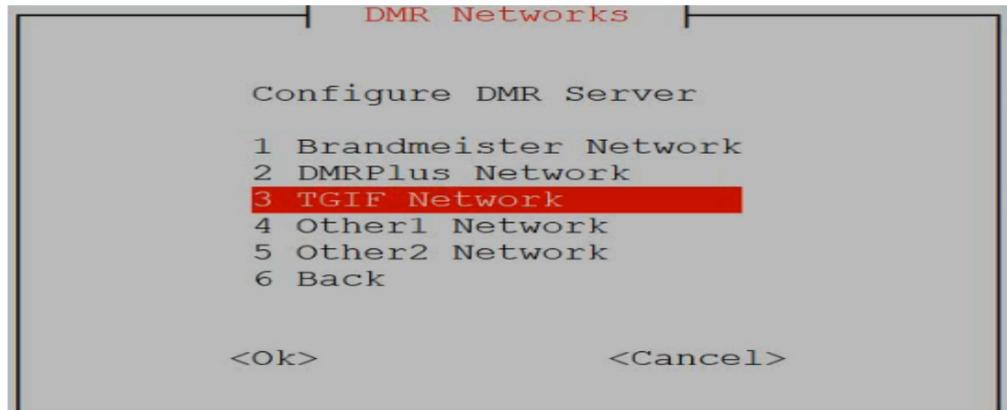
Scroll down the list and choose option <59> IPSC2-PhoenixF unless you have a preference and press <Enter>



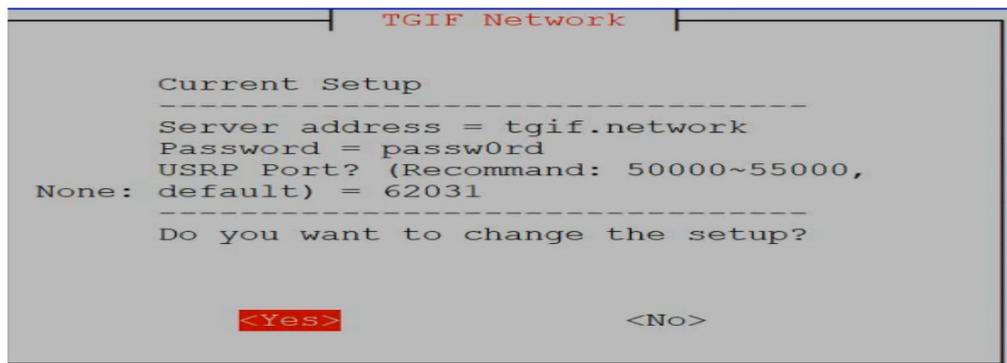
Select <No> and press <Enter>



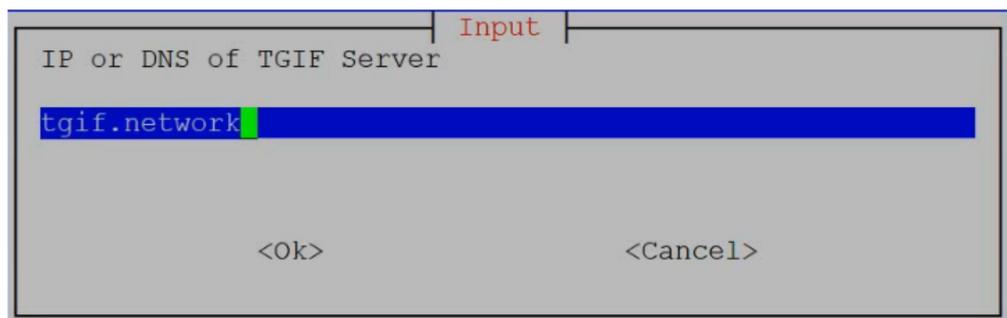
Select Option <3> and <OK>



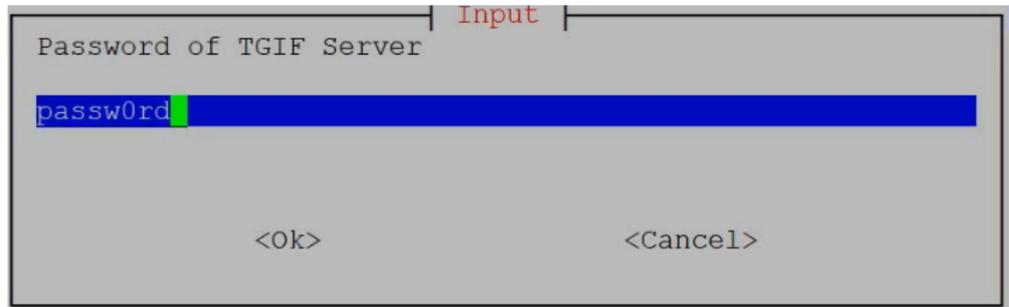
Select <Yes>



Select <OK>

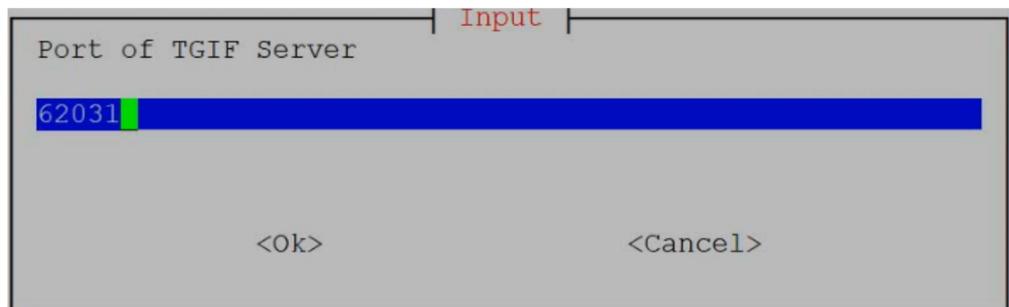


Leave as default or type in your personnel TGIF password and select **<OK>**



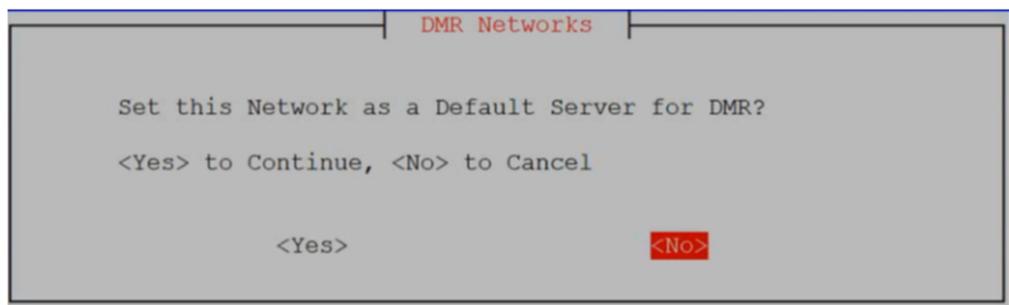
A dialog box titled "Input" with the text "Password of TGIF Server". Below the text is a blue input field containing the text "passw0rd" with a green cursor at the end. At the bottom of the dialog are two buttons: "<Ok>" and "<Cancel>".

Select **<OK>**



A dialog box titled "Input" with the text "Port of TGIF Server". Below the text is a blue input field containing the text "62031" with a green cursor at the end. At the bottom of the dialog are two buttons: "<Ok>" and "<Cancel>".

Select **<No>**



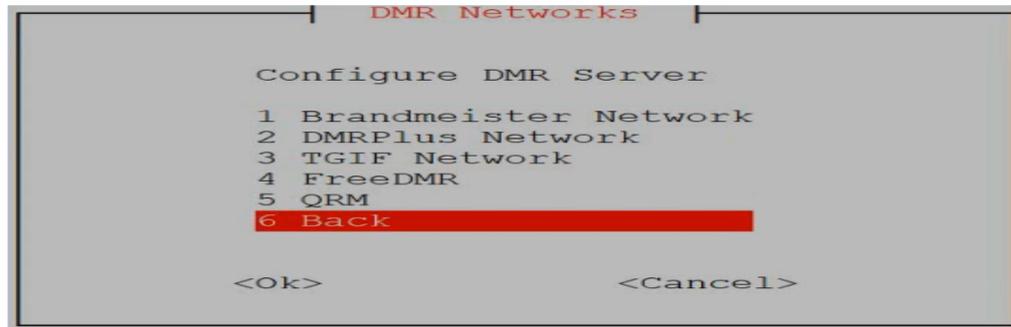
A dialog box titled "DMR Networks" with the text "Set this Network as a Default Server for DMR?". Below the text is the instruction "<Yes> to Continue, <No> to Cancel". At the bottom of the dialog are two buttons: "<Yes>" and "<No>".

Select **<OK>**

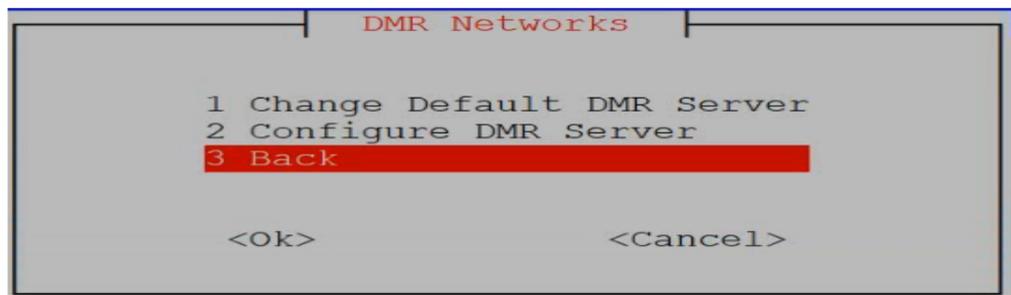


A dialog box with the text "Finished" centered. At the bottom of the dialog is a single button: "<Ok>".

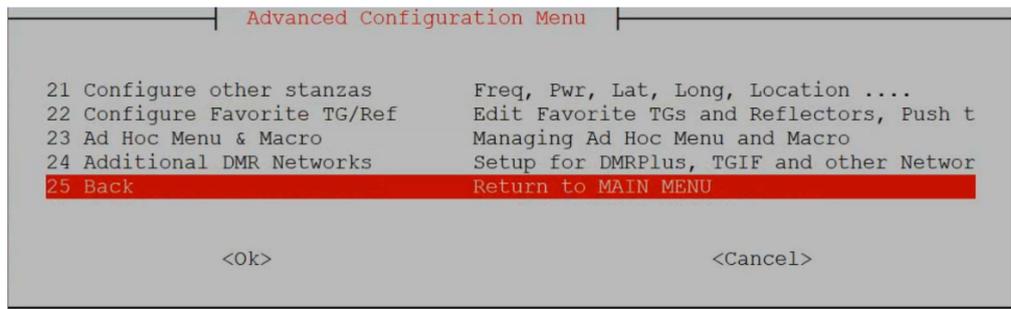
Select option <6>, then <OK>



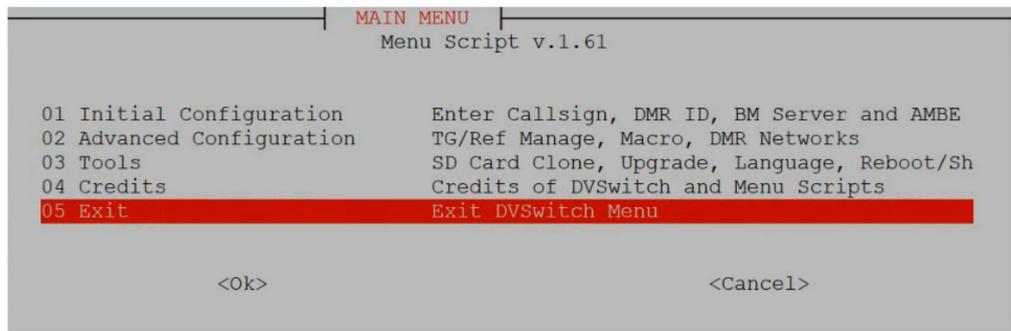
Select option <3> then <OK>



Select option <25> then <OK>



Select option <05> then <OK>



In the Terminal type **apt update**

```
root@repeater:/usr/local/dvs# apt update
Hit:1 http://archive.raspberrypi.org/debian buster InRelease
Hit:2 http://raspbian.raspberrypi.org/raspbian buster InRelease
Hit:3 http://dvswitch.org/DVSwitch_Repository buster InRelease
Get:4 http://apt.allstarlink.org/repos/asl_builds buster InRelease [7392 B]
Err:4 http://apt.allstarlink.org/repos/asl_builds buster InRelease
  The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 6A72C389B517460F
Fetched 7392 B in 4s (1891 B/s)
Reading package lists... 52%
```

When completed type **apt upgrade**

```
root@repeater:/usr/local/dvs# apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... 10%
```

Press **<Y>** to continue

```
102 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 111 MB of archives.
After this operation, 8569 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

Type in **apt install analog-reflector**

```
root@repeater:/usr/local/dvs# apt install analog-reflector
```

Answer **<Yes>**

```
The following NEW packages will be installed:
  analog-reflector libev4 libwebsockets8 lsof mosquito
0 upgraded, 5 newly installed, 0 to remove and 0 not upgraded.
Need to get 11.7 MB of archives.
After this operation, 1035 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

Type **cd /opt/Analog_Reflector/ssl**

```
root@repeater:/usr/local/dvs# cd /opt/Analog_Reflector
root@repeater:/opt/Analog_Reflector# cd ssl
root@repeater:/opt/Analog_Reflector/ssl#
```

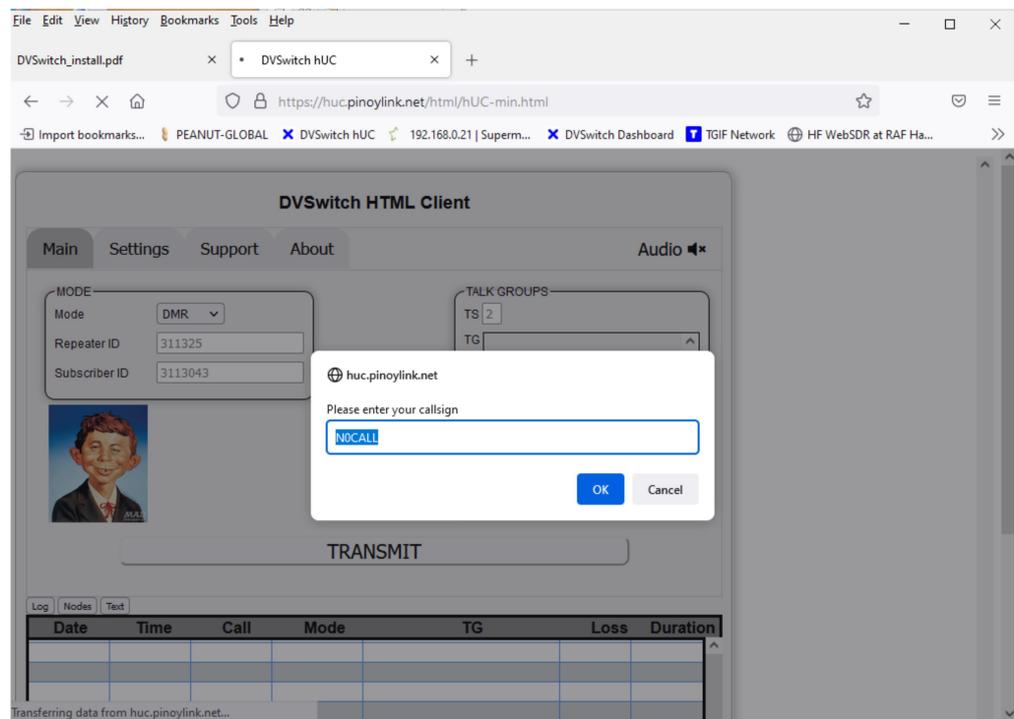
Type in `./mkcerts.sh` **reboot after this as pic**

```
root@repeater:/opt/Analog_Reflector/ssl# ./mkcerts.sh
Can not get country, state and locality, using placeholders.
Generating self signed certificate, please wait.....
```

Type in `cd ..`, then `./Analog_Reflector -f Analog_Reflector.json`

```
Your certificate is now ready for use
root@repeater:/opt/Analog_Reflector/ssl# cd ..
root@repeater:/opt/Analog_Reflector# ./Analog_Reflector -f Analog_Reflector
```

Open up a web browser you're your PI's IP address <https://192.168.x.x/html/hUC-min.html> and check if the client page comes up. If it does login with your call sign and your node password. **NOTE:** you will not be able to transmit at this point.



Go back to the terminal type in `cd ..` , then `cd Analog_Bridge`, then `nano Analog_Bridge.ini`

```
root@repeater:/opt/Analog_Reflector# cd ..
root@repeater:/opt# cd Analog_Bridge
root@repeater:/opt/Analog_Bridge# ls
Analog_Bridge      adv_hotspot.txt      adv_rxgain.txt      dvsm.basic
Analog_Bridge.ini  adv_main.txt         adv_tgref.txt       dvsm.macro
adv_audio.txt      adv_managetg.txt     adv_tools.txt       dvsm.sh
adv_dmr.txt        adv_resetfvrt.txt   adv_txgain.txt      parrot.sh
root@repeater:/opt/Analog_Bridge# nano Analog_Bridge.ini
```

scroll down to **[USRP]** change **txPort** and **rxPort** to **31001**. The CTRL -X save and exit.

```
GNU nano 3.2 Analog_Bridge.ini
txTg = 9 ; TG to use for all frames sent from An$
txTs = 2 ; Slot to use for frames sent from Anal$
colorCode = 1 ; Color Code to assign DMR frames

; Information for USRP channel driver. This interface uses PCM to transfer aud$
; There are two typical configurations, ASL and Transcode. ASL (AllstarLink) is$
; to a digital network. Transcode is when Analog_Bridge actually points its PC$
; causing a TLV <-- (pcm <--> pcm) --> TLV type of architecture.
; When using ASL, this matches the rpt.conf ASL file with a setting like:
; rxchannel = usrp/127.0.0.1:34001:32001
; When Transcoding, make two ini files and set txPort equal to the other inst$
; each instance with its own ini file.
[USRP]
address = 127.0.0.1 ; IP address of USRP partner (Analog_Re$
txPort = 52424 ; Transmit USRP frames on this port
rxPort = 52424 ; Listen for USRP frames on this port
usrpAudio = AUDIO_USE_GAIN ; Digital -> Analog (AUDIO_UNITY, AUDIO$
usrpGain = 4.00 ; Gain factor when usrpAudio = AUDIO_US$
usrpAGC = -20,10,100 ; Set the agc threshold (db), slope (db$

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

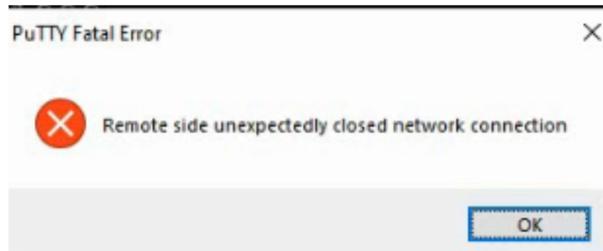
Type in `cd ..` , then `./Analog_Reflector user [call sign] [dmrid] [dmrid11] [node passwd] 11`. Fill in the square brackets with your call sign, your dmrid, your dmrid with the 2 number prefix you chose in the initial setup of dvswitch, your node passwd and again the 2 number prefix.

```
root@repeater:/opt/Analog_Bridge# cd ..
root@repeater:/opt# cd Analog_Reflector
root@repeater:/opt/Analog_Reflector# ./Analog_Reflector user M7MRX 2 4 2 11 11
User successfully created.
root@repeater:/opt/Analog_Reflector#
```

In terminal type **reboot**

```
root@repeater:/opt/Analog_Reflector# reboot
```

Click <OK>



Re open a terminal in putty and login at the prompt type in `sudo -s`

```
Last login: Thu Oct 21 19:26:59 2021 from 192.168.0.35
repeater@repeater:~$ sudo -s
root@repeater:/home/repeater#
```

Type `cd /opt/Analog_Reflector`, then `nano Analog_Reflector.json`

```
root@repeater:/home/repeater# cd /opt
root@repeater:/opt# cd Analog_Reflector
root@repeater:/opt/Analog_Reflector# nano Analog_Reflector.json
```

Change `"dmrID": "1234567"`, to your `dmrID` number

```
GNU nano 3.2 Analog_Reflector.json
{
  "nodeName": "DVSwitch",
  "dmrID": "1234567",
  "abAddress": "127.0.0.1",
  "usrpTxPort": "31001",
  "usrpRxPort": "31001",
  "mobilePort": "12345",
  "wsPort": "443",
  "keyDir": "./ssl/",
  "siteroot": "./arRoot",
  "logFileName": "/var/log/dvswitch/Analog_Reflector.log",
  "logLevel": "2",
  "disallowUnknownClients": false,
  "brokerURL": "mqtt://localhost:1883",
  "rightsMask": "4",
  "autoMute": true,
  "clientDebugMode": false,
  "clientModes": ["Intercom", "DMR", "STFU", "DSTAR|D-Star", "NXDN", "P25", "YS$
  "bridges": {
    [ Read 34 lines ]
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell  ^_ Go To Line
```

Scroll down to node and change [1999] to your Allstar node number.

```
GNU nano 3.2 Analog Reflector.json
"logFileName": "/var/log/dvswitch/Analog_Reflector.log",
"logLevel": "2",
"disallowUnknownClients": false,
"brokerURL": "mqtt://localhost:1883",
"rightsMask": "4",
"autoMute": true,
"clientDebugMode": false,
"clientModes": ["Intercom", "DMR", "STFU", "DSTAR|D-Star", "NXDN", "P25", "YSF",
"bridges": {
  "asl": [
    {"node": "1999", "address": "127.0.0.1", "rxPort": "34001", "txPort": "34001"},
  ],
  "ab": [
    {"name": "DMR", "address": "127.0.0.1", "rxPort": "51100", "txPort": "51100"},
    {"name": "D-Star", "address": "127.0.0.1", "rxPort": "52100", "txPort": "52100"},
    {"name": "NXDN", "address": "127.0.0.1", "rxPort": "53100", "txPort": "53100"},
    {"name": "P25", "address": "127.0.0.1", "rxPort": "54100", "txPort": "54100"},
    {"name": "YSF", "address": "127.0.0.1", "rxPort": "55100", "txPort": "55100"}
  ]
}
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

Then scroll to the end of the line and change “amiSecret”: “11cgi” to “amiSecret”: “your node password”

```
GNU nano 3.2 Analog Reflector.json Modified
"logFileName": "/var/log/dvswitch/Analog_Reflector.log",
"logLevel": "2",
"disallowUnknownClients": false,
"brokerURL": "mqtt://localhost:1883",
"rightsMask": "4",
"autoMute": true,
"clientDebugMode": false,
"clientModes": ["Intercom", "DMR", "STFU", "DSTAR|D-Star", "NXDN", "P25", "YSF",
"bridges": {
  "asl": [
    {"node": "32001", "rights": 3, "amiUserName": "admin", "amiSecret": "11cgi"},
  ],
  "ab": [
    {"name": "DMR", "address": "127.0.0.1", "rxPort": "51100", "txPort": "51100"},
    {"name": "D-Star", "address": "127.0.0.1", "rxPort": "52100", "txPort": "52100"},
    {"name": "NXDN", "address": "127.0.0.1", "rxPort": "53100", "txPort": "53100"},
    {"name": "P25", "address": "127.0.0.1", "rxPort": "54100", "txPort": "54100"},
    {"name": "YSF", "address": "127.0.0.1", "rxPort": "55100", "txPort": "55100"}
  ]
}
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

CTRL-X save and Exit, type in reboot and that it your done

