BRIAN Allstar Node Setup and Configuration Guide

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Introduction

This document describes in detail, the process to setup and configure an Allstar node using a **BRIAN** by N8AR (www.hamprojects.info) and the Allstar image you will download from the HamVOIP website (www.hamvoip.com).

When you have successfully completed this procedure, you will have a basic operating Allstar node. This document does not include the steps required to add enhancements to your node such as a WiFi connection, additional DTMF commands to your configuration, Supermon or Echolink. These can be found in the form of "How To" documents on the HamVOIP website.

A BRIAN Node in Operation

Required Hardware

1. A fully assembled **BRIAN**.

2. A Raspberry Pi3 or Pi4 (any version).

3. A case for the Raspberry Pi. A metal case is preferred but if you want to use a WiFi connection instead of a wired network connection then a plastic case may be required to obtain adequate range.

4. A micro SD card – 16GB or larger, Class 10 or better.

5. A power supply for the Pi – This should be a power supply intended for your version of the Raspberry Pi. These supplies typically provide 5.1 to 5.2 VDC to the Pi. Current requirements vary with version.Numerous problems with Allstar Nodes have been traced to inadequate power supplies.

Create an Account with Allstar

Normally your first step is to create an account with AllstarLink. It is possible to setup a private Allstar node without an account but that is beyond the scope of this document.

Using your computer and a browser such as Chrome, go to https://web-tpa.allstarlink.org/ and click on the "Logon/Sign up" Tab. A small Allstar Account Logon screen will appear. Click on the "Sign Up" link at the bottom of this smaller screen.
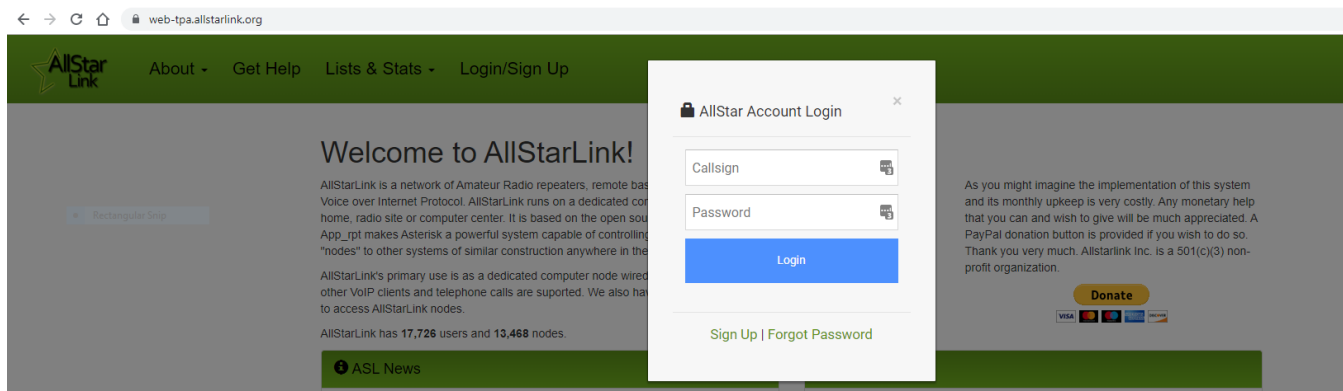
Read the information on the screen that appears and click on "Begin Registration."
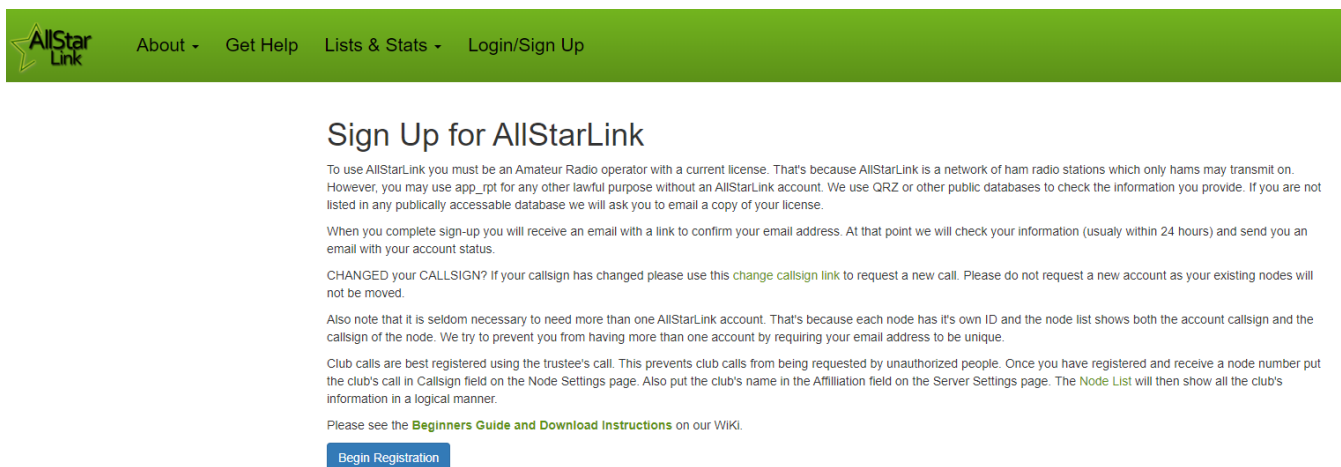
Fill in the form with your information and click "Submit.". It will take 1 to 24 hours to receive confirmation email. While waiting you may skip ahead in this procedure to the **Software** Section.

Create a Server and Request a Node number

Go to https://web-tpa.allstarlink.org/ and logon using the information you received in your confirmation email from AllstarLink.

First you need to create a server. The server is your Raspberry Pi.

Click on the **Portal** tab. In the pull-down menu, click on **Server Settings**. Click on **Proceed with Server Setup**

New Server Settings

Server Name

> Server name

25 characters max

Server Location

> location

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

Site

> Name of site, if any.

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

Affiliation

> Affiliation, if any.

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

Hostname

> hostname

Unix Hostname. 25 characters max. Optional.

IAX Port

> 4569

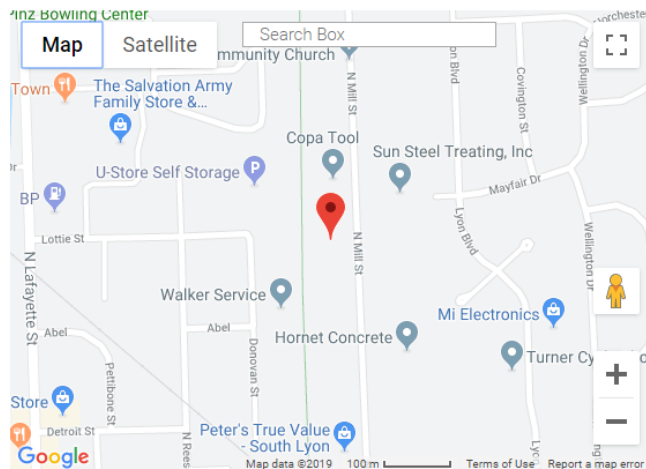Normally 4569 when only one server behind a NAT router.

Proxy IP

> IP address

Normally blank. Only needed in rare cases. Optional.

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

Latitude

> 42.464683

Server Logitude

> -83.646056

Submit

Fill in all the information:
1. Server name - The server name is arbitrary and will be adjusted later. Suggest [*your call-1*] (eg: "W8XYZ-1") for now.
2. Server location – City, State is customary.
3. Site – Suggest "Home," "Shack," Doghouse," etc. iv.
4. Affiliation – optional.
5. IAX Port – leave this unchanged.
6. Latitude and Longitude – Use the map to locate your server site. This will enter the Lat./Long. data automatically.

Click on **Submit**

Next you need to request a node number. The node number is used by Allstar running on your Server (Raspberry Pi).

Click on the **Portal** tab. In the pull-down menu, click on **Node Settings**. Click on the **Request a new node number** link

The next screen that appears will prompt you to select the server to which the node is assigned. If you have only one server, the server you just created, it will appear in the selection box. If you have more than one server, the selection box is a drop-down selector. Select the appropriate server and click on the **Submit** button. A message is optional.

You can Logout of AllstarLink.org.

It will take 1 to 24 hours to receive confirmation email. While waiting you may continue with the **Software** section of this procedure.

Software

In this section you will obtain the Allstar software, other apps required to install it and prepare a microSD card which you will plug into your Raspberry Pi. These instructions assume you will be using a Windows PC. The process can be completed using an Apple PC or Linux PC but is beyond the scope of this procedure. This procedure is also specific to the HamVOIP Allstar image.

1. Select a Windows computer to be used as the setup and control computer for the Raspberry Pi node and do the following steps. The computer you choose needs to be capable of reading and writing microSD memory cards.

2. Click on the following link (or type it into your browser

   https://www2.hamvoip.org/RPi2/RPi2-3-4_V1.6-01_Allstar.exe

   This will start a download process by opening File Manager on your PC. Save the file in a well know directory – suggest - /My Documents/Allstar.

3. Open the directory where the downloaded file was saved. Double click on the file. Depending on your virus protection, you may be presented with a warning notice about an unrecognized app. It is OK to continue the installation. (For Windows Defender, click on **more info** and select **Run Anyway**. The file is a self-extracting executable that will yield the following files:
   PuTTY.exe - SSH terminal software.
   RPi2-3_V1.6-01_Allstar.img - Rasp Pi image for micro SD card
   Win32diskimager-1.0.0-install.exe - Software to write the SD card *WinSCP-5.13.7-Setup.exe* – SFTP/FTP Client

4. Run (double-click) the win32diskimager installer. Place an icon on the desktop for convenience.

5. We are not going to use PuTTY or WinSCP. You can delete them from your computer if desired. We are going to use MobaXterm instead. Click on the following link (https://mobaxterm.mobatek.net/) On the MobaXterm website, click on **GET MOBAXTERM NOW!** Then click on *Download Now* for the free edition and then click on the *Installer Edition.* Unzip and install the downloaded MobaXterm Zip file.

6. Insert a micro SD card (using SD card adapter or USB adapter) in the computer. If you have any security software running that prevents "MBR" (master boot record" access, **TURN IT OFF** before you begin the transfer process. (Turn it back on afterward.)

7. Start win32diskimager (double-click on the desktop icon). It should point to the SD card as the destination. Browse to the directory containing the Allstar.img file and select it as the source to be transferred. Click **Write**. The process should take 5 to 20 minutes depending on your computer.

8. Once the transfer is completed, safely eject the microSD card by clicking on the **Safely Remove Hardware and Eject Media** in the Windows System Tray. Remove the microSD card from the PC and insert it into the microSD card slot in the Raspberry Pi (bottom side - connector labeled "MICRO SD CARD").

9. You now have a microSD card with the Allstar image installed in your Raspberry Pi and are ready to configure your Allstar node.


Configuring Allstar

In this step you will configure Allstar to work with BRIAN. You have a choice as to how to communicate with your Raspberry Pi. You can connect a keyboard to a USB port on the Pi and a monitor to the HDMI port or you can open a terminal emulation session using the SSH protocol running on your computer communicating with your node over a LAN connection. This procedure uses the latter approach - running the MobaXterm program which you will install on your PC.

1. Begin by connecting your Raspberry Pi and your PC to the same network using CAT 5E or better cables.

2. Plug the power supply into the Raspberry Pi and observe the green LED on the Pi. If you know Morse code, you may recognize it is sending a message. It sends HI HI followed by the IP address that has been assigned by the DHCP function in your router. We need the IP address so that we can connect to the PI from the PC using MobaXterm. If you can not copy the Morse code from the blinking LED, you can log into you router and see the IP address that has been assigned by checking the attached devices. Look for a device called "alarmpi".

3. Start the MobaXterm app. Click on the ***Session*** icon. This opens a new window. Click on the **SSH** icon. Enter the following:
   a. Remote host = the IP address assigned to the Pi by your router
   b. Put a check in the Specify Username checkbox
   c. Enter *root* for the username
   d. Change the Port to *222*

4. Click on **OK**. You should now be connected to your Pi and see a window similar to this.
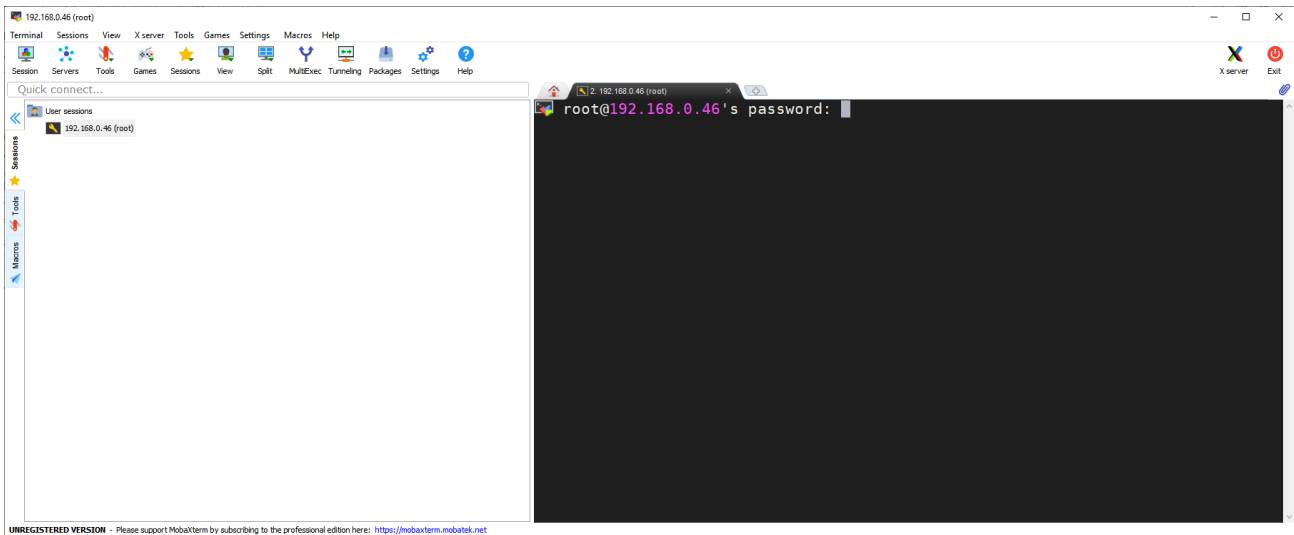

5. Enter *root* for the password and press **<enter>.** The password does not type on the screen so you should see the following.
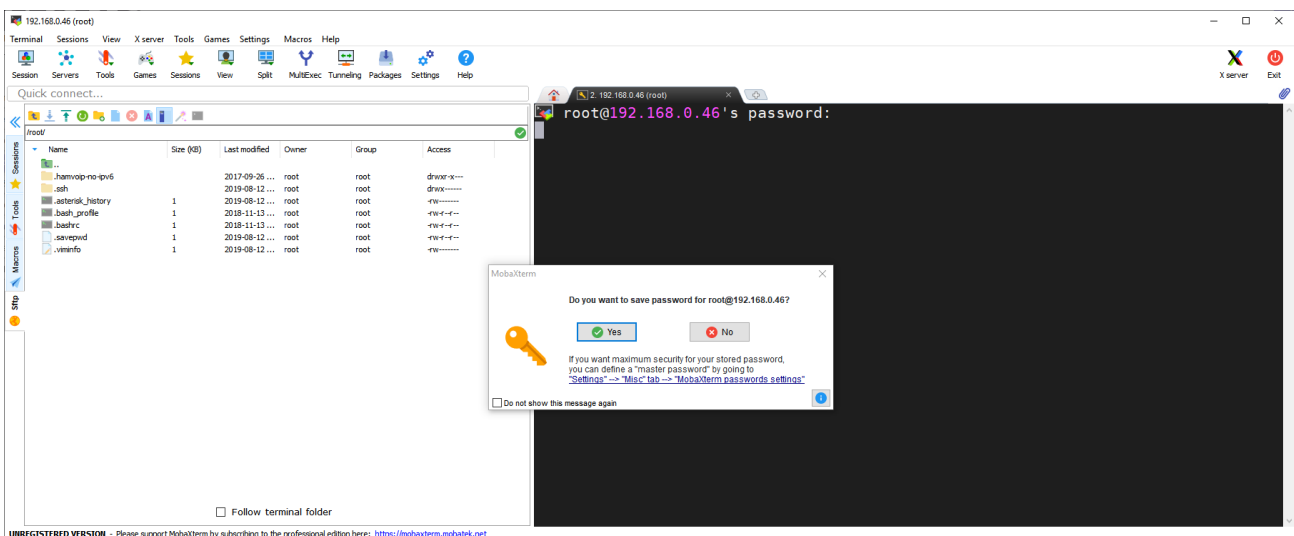
6. Click on **NO** because you will be changing the password in the following setup steps. You should now see the following screen
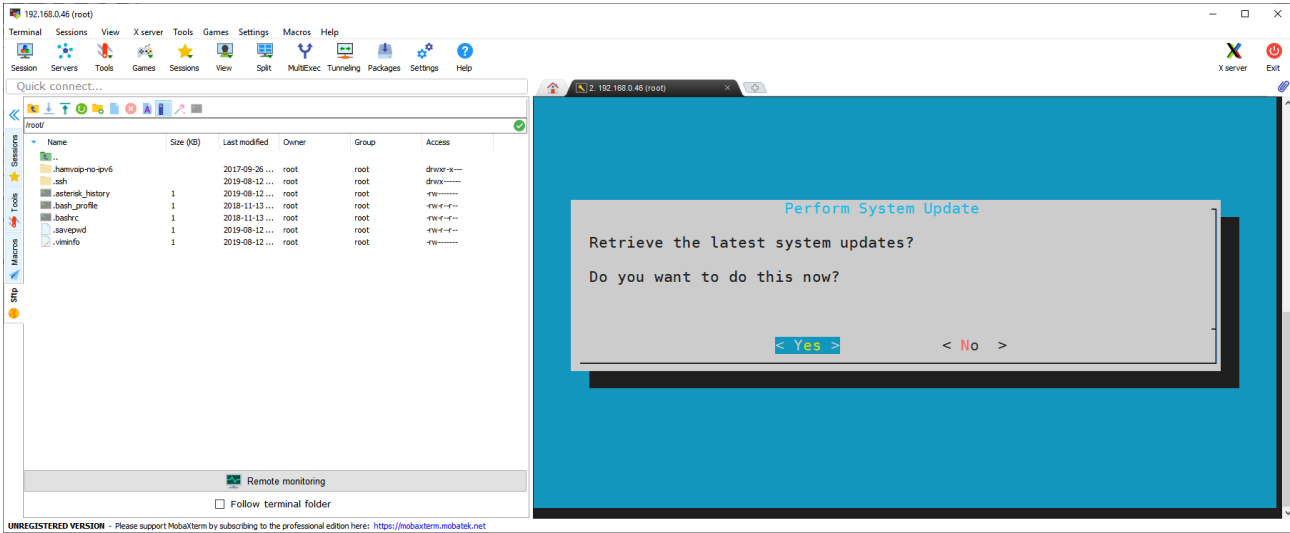
7. Click on **Yes** to retrieve the latest system updates. You will see the latest system updates being installed on your Pi. Wait until the screen indicates that the System has been updated. Click on **OK**
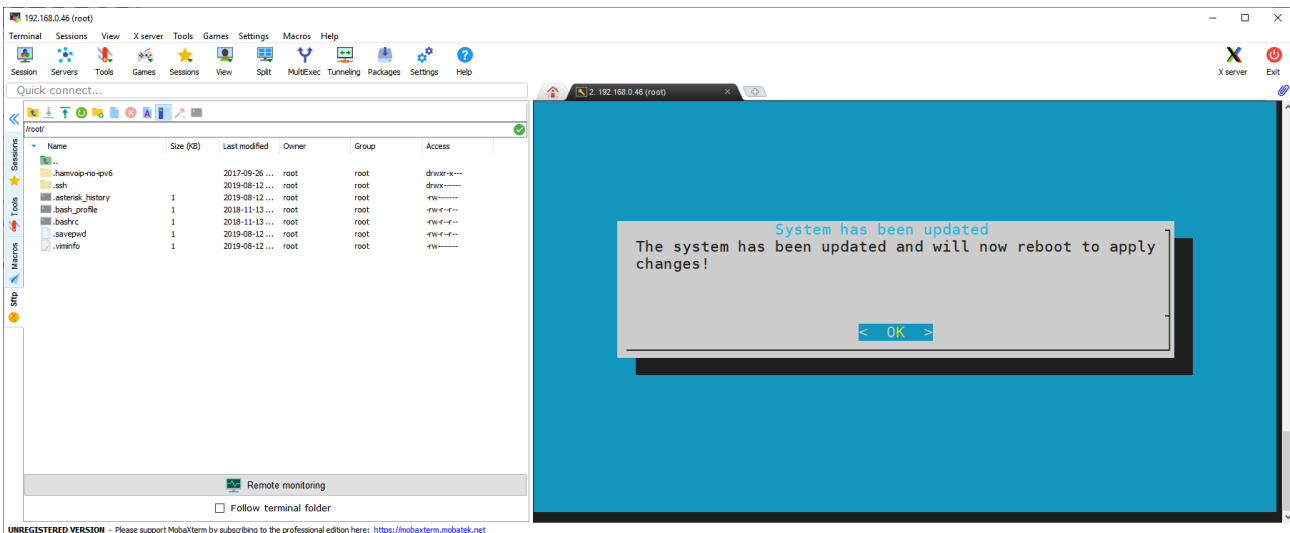
8. Click on **OK** to reboot and apply the changes. The Pi will reboot (watch the blinking green LED on the Pi). MobaXterm will indicate that the Remote Side has unexpectedly closed the network connection.
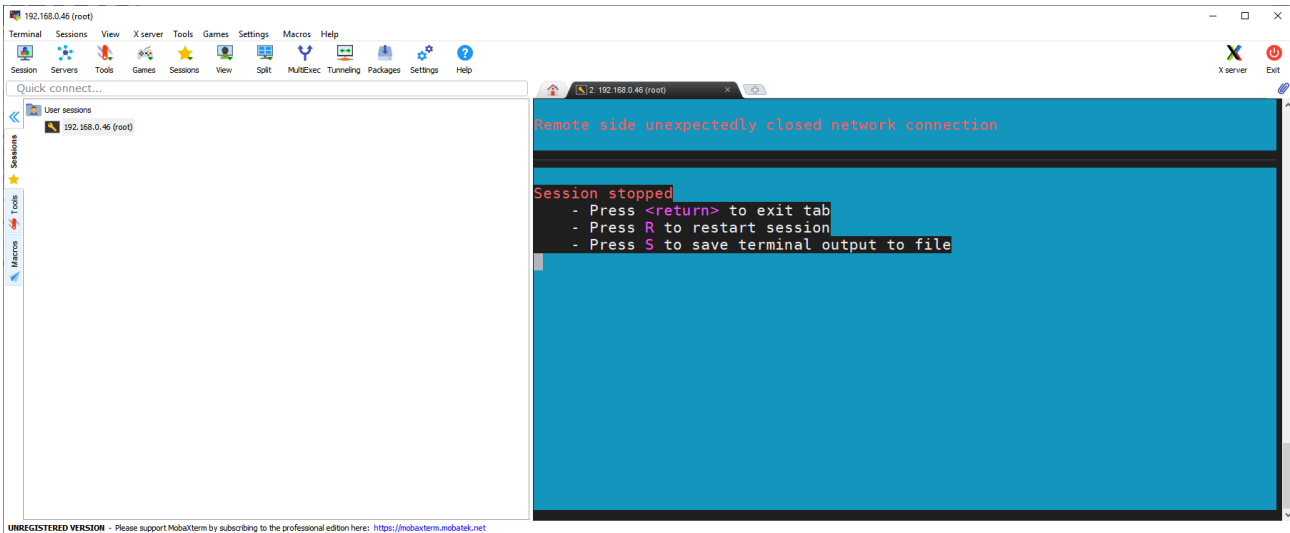
9. Press **R** to restart the session then enter *root* for the password. Click on **NO** to not save the stored password. You will be asked if you want to retrieve the latest system updates. Click **No**. You will see the following screen.

10. Click **Yes** to run the first setup now script.
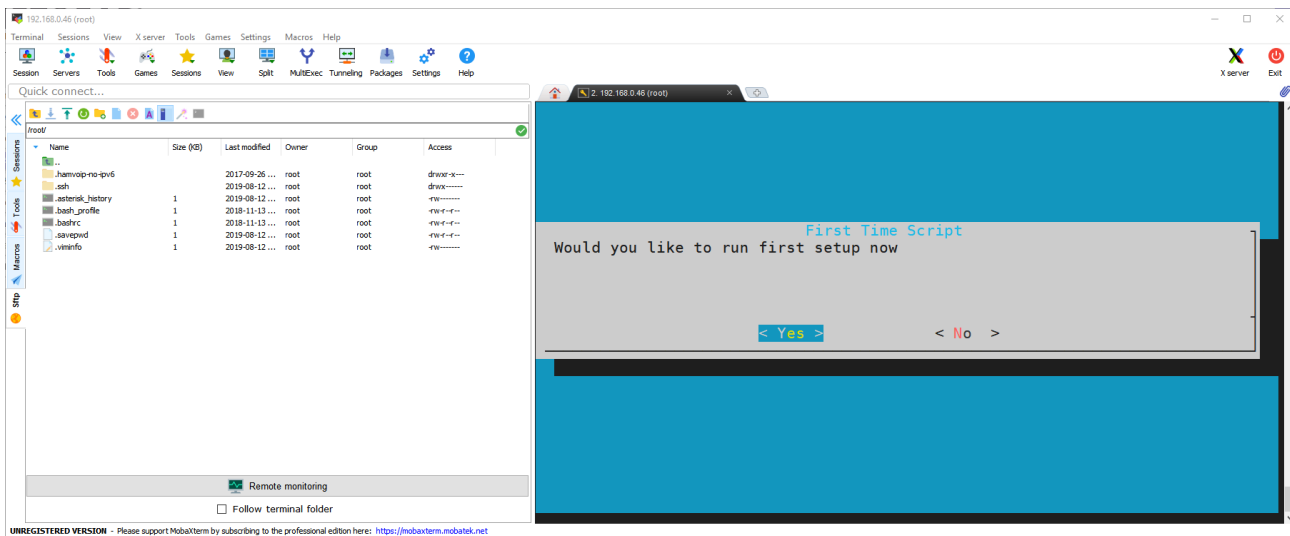
If, for any reason, you exit the "firsttime.sh" script before reaching its end, you will need to rerun the "firsttime.sh" script again in order to complete the node configuration. If this happens, follow these steps to rerun the "firsttime.sh" script.

        a. From the "Admin" screen, select item 9 "Start Bash shell interface" by typing 9 (**top row numeric keys ONLY!**) or scrolling to item 9. Click on the <**Run Selected Item**> or press <enter>.

        b. Type *firsttime.sh* and press <enter>

When entering numbers in the "firsttime.sh" setup script, **DO NOT USE THE NUMERIC KEYPAD. ENTER NUMBERS ONLY BY USING THE NUMBERS ALONG THE TOP ROW OF KEYS ON THE KEYBOARD!!!!!** The numeric keypad may cause the script to
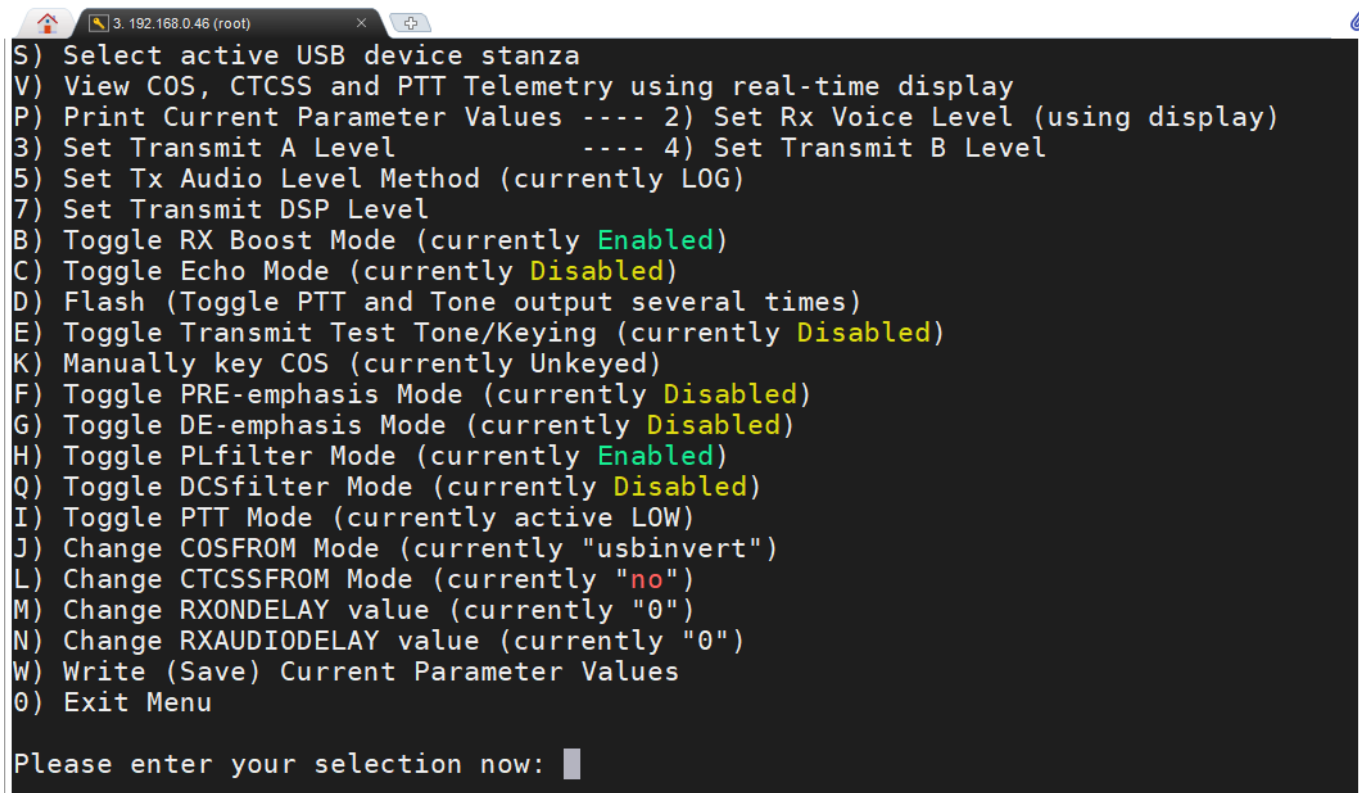
terminate abruptly or to skip questions, resulting in an incomplete setup and a need to re-run the script.

11. You will now be prompted to change the password for the root login account. **Change the password** and **write down the new password.** It is the ONLY way you can log back into the Pi, unless you want to start over with a NEW image load to the SD card! Remember, the password is case sensitive

12. The next screen asks if you are setting up a private node. Answer **NO**

13. Enter your assigned node number in the next screen and press **OK**

14. The script will next ask if you want to set up the node configuration for asterisk – respond – **YES.** You will be notified that some configurations will continue after reboot, but the system will not reboot at this time. Confirm the notification.

15. Next the script asks if you wish to change the time zone. The default time zone is "America/New York" or Eastern USA. Answer **NO** if you are in the Eastern time zone, otherwise answer YES and select your time zone.

16. On the next screen, the script will display the "hostname" of the Pi computer and ask if you wish to change to a new name. While any name is OK, it is suggested that you change the name to [*your call*]-[*node number*] (eg:
W8XYZ-12345). To change the hostname answer **Yes**

17. The script will display a screen asking you to enter the new hostname. Enter the new name and respond – **OK**.

18. The next screen displays the Pi's IP address and whether it is dynamic or static, asking if you wish to change these parameter. For most applications, it is recommended that you use a dynamic IP. Answer **No**.

19. The script then asks if you want to change the SSH port number. It is not suggested that you change the port number from 222. Answer **No.**

20. The next screen will prompt you to reboot the Pi system, reminding you to use the new password that you entered earlier It also displays the IP address and SSH port numbers that must be used to log in.. Respond – **REBOOT.**

21. Again, as the system reboots, you will lose terminal communication with it through MobaXterm. In MobaXterm, press **R** to restart the session.

22. Log into the Pi. Password is the **NEW** password that you earlier in this procedure. MobaXterm will ask if you want to save the password. This time answer **Yes**

23. A screen will be displayed that indicates that the first time node configuration will now proceed. This is the continued configuration that was indicated after reboot notified previously. Answer **Yes.**

24. A screen prompts you to enter the node number. This is the number assigned to your node by AllstarLink.org. **DO NOT USE THE NUMERIC KEYPAD TO ENTER THIS NUMBER!** After entering the number, respond – **OK**.

25. The next screen asks for entry of your station call. Enter your call and respond – **OK**. **DON'T USE THE NUMERIC KEYPAD!**

26. The next screen asks if you want to report the status of your node to AllstarLink.org. This is very useful for the organization and does not compromise you in any way. You are encouraged to respond – **YES**.

27. Next, you choose a voice ID or a CW ID that will be broadcast by your node. If you respond – **NO**, a CW ID will be used. If you respond – **YES**, a voice ID will be created and used.

28. The next screen asks if you need to change the default iax protocol port number. Leave this at 4569 if this is your first node. It is customary to decrease this number by 1 for each additional node (i.e. 4568, 4567….) Respond – **OK**.

29. The next screen chooses the duplex mode for your node. The choices are presented and explained on the screen. Normal simplex nodes select the default choice of "1" and respond – **OK**.

30. Next, you must enter the password that was assigned to your node by AllstarLink.org. This was obtained by you from the Allstar Link website. Enter this password carefully and **DO NOT USE THE NUMERIC KEYPAD** for any numbers that appear in the string. Respond – **OK**.

31. On the next screen you are asked if you would like to set a password for iaxRpt. Explaining iaxRpt is beyond the scope of this document, but this password can be entered at another time if you chose to use this program. Respond – **YES** if you want to enter a password, and respond to the prompts that will be presented by the script in that case. Otherwise, respond – **NO**.

32. Next, you will be prompted to configure the "Simple USB" settings. These settings can be reviewed and adjusted once the Asterisk Admin menu is up and running. Respond – **NO**.

33. The next asks if you want to restart Asterisk. Respond **Yes**

34. The next screen that should appear is the "Admin Menu List for: [*host-name*]" followed by a menu of choices for configuring and controlling the host node.

Configuring SimpleUSB-Tune-Menu for BRIAN

1. From the "Admin Menu" select item 12 – Run the SimpleUSB-tune-menu Application, by clicking on item 12 or scrolling to item 12 with the arrow keys, and then clicking on **<Run Selected Item>** or by pressing <enter>

2. The "SimpleUSB-tune-menu" will be displayed as shown below.

```
3. 192.168.0.46 (root)                                                    ×       ＋
S) Select active USB device stanza
V) View COS, CTCSS and PTT Telemetry using real-time display
P) Print Current Parameter Values ---- 2) Set Rx Voice Level (using display)
3) Set Transmit A Level          ---- 4) Set Transmit B Level
5) Set Tx Audio Level Method (currently LOG)
7) Set Transmit DSP Level
B) Toggle RX Boost Mode (currently Enabled)
C) Toggle Echo Mode (currently Disabled)
D) Flash (Toggle PTT and Tone output several times)
E) Toggle Transmit Test Tone/Keying (currently Disabled)
K) Manually key COS (currently Unkeyed)
F) Toggle PRE-emphasis Mode (currently Disabled)
G) Toggle DE-emphasis Mode (currently Disabled)
H) Toggle PLfilter Mode (currently Enabled)
Q) Toggle DCSfilter Mode (currently Disabled)
I) Toggle PTT Mode (currently active LOW)
J) Change COSFROM Mode (currently "usbinvert")
L) Change CTCSSFROM Mode (currently "no")
M) Change RXONDELAY value (currently "0")
N) Change RXAUDIODELAY value (currently "0")
W) Write (Save) Current Parameter Values
0) Exit Menu

Please enter your selection now: ▮
```

To setup the node for BRIAN, we need to change the following settings by making the indicated selections:

- Item **B** – Change RX Boost to **Disabled**
- Item **F** – Change PRE-emphasis mode to **Enabled**
- Item **G** – Change DE- emphasis mode to **Enabled**
- Item **J** – Change **"usbinvert"** to **"usb"**

3. Enter **W** to save the changed settings then enter **0** to exit the SimpleUSB-Tune-Menu

Connecting BRIAN and Verifying the Radio Interface

In this section you will connect BRIAN to your Raspberry Pi and verify that you can communicate with BRIAN using a radio.

1. Unplug the 5 VDC power from your Raspberry Pi

2. Connect BRIAN to your Pi using the supplied 12" USB Type A Male to USB Type B Male cable. You can use any of the USB ports on the Raspberry Pi.

3. Using the rotary CHANNEL selector knob on BRIAN, select one of the 16 frequencies you programmed into your Baofeng BF888S before you disassembled it to build your BRIAN.

4. Rotate the VOLUME/POWER knob on Brian (knob nearest the edge of the case) full CCW then slightly CW. You should hear an audible click as the power switch on the BF888S radio in BRIAN is turned ON. (Note that the setting of the VOLUME has no effect on BRIAN)

5. Configure the radio you will use to communicate with BRIAN (an HT is perfect) to the RF and CTCSS frequencies you have selected with the rotary selector knob on BRIAN

6. Apply 5 VDC power to the Raspberry Pi. Verify the the left two LEDs are solid green and the third GREEN LED begins to blink after a short time.

7. After a short wait, you should hear your node send your call sign ID and announce the IP address of the node to your radio.

8. Push and release the PTT switch on you radio. You should see the RED PTT LED on BRIAN illuminate and hear a short RF carrier with a courtesy tone at the end.

Setting Receive and Transmit Voice Levels

1. Use MobaXterm to connect to your Pi.

2. From the "Admin Menu" select item 12 – Run the SimpleUSB-tune-menu Application, by clicking on item 12 or scrolling to item 12 with the arrow keys, and then clicking on <Run Selected Item> or by pressing <enter>

3. In the SimpleUSB-Tune-Menu, select item **2**. This will start the procedure to set the receive voice level for your node.

```
Please enter your selection now: 2
RX VOICE DISPLAY:
                                v -- 3KHz        v -- 5KHz

```

4. Key up your radio and speak into your microphone at normal levels. You will see a bar emerge from the left side of the screen. Its length will vary with the level of your voice in real time. You want to set the RX level so that the bar just extends slightly beyond "5 KHz" on the screen. Press **<enter>** and you will see the following screen.

```
Please enter your selection now: 2
RX VOICE DISPLAY:
                                v -- 3KHz        v -- 5KHz

Current setting on Rx Channel is 500
Enter new value (0-999, or CR for none): 
```

5. Follow the instructions entering new values for the setting until the level shown by the moving bar as seen on the display is correct. Then press <return> to return to the SimpleUSB-Tune-Menu.

6. Selection **3** is used to adjust the audio level from your node that you hear on your radio. The current setting is 500. For BRIAN, you may have to increase this level. If you notice that the audio level you hear from your node differs from what you hear on your local repeaters or simplex, you can adjust it.

7. Select **0** to exit the SimpleUSB-Tune-Menu and return to the Admin Menu. Press **W** and **<enter>** to save your current configuration before exiting if required.

Testing DTMF Decoding

In this section you will verify that all of your DTMF tones are being properly decoded and explore some of the available DTMF commands.

1. In the Admin Menu, scroll down and select item **11**. This will start the Asterisk client.

```
Erase is backspace.


        Starting Asterisk client. Please type: exit<ENTER>
         when done and you will return to the admin menu.




Asterisk 1.4.23-pre.hamvoip-V1.5.4-03-app_rpt-0.327-10/22/2019, Copyright (C) 1999 - 2019
 HamVoIP.org and others.
Created by Mark Spencer <markster@digium.com>
Asterisk comes with ABSOLUTELY NO WARRANTY; type 'core show warranty' for details.
This is free software, with components licensed under the GNU General Public
License version 2 and other licenses; you are welcome to redistribute it under
certain conditions. Type 'core show license' for details.
==================================================================
Connected to Asterisk 1.4.23-pre.hamvoip-V1.5.4-03-app_rpt-0.327-10/22/2019 currently run
ning on N8AR-44230 (pid = 329)
Verbosity is at least 4
N8AR-44230*CLI> █
```

2. Key your transmitter and send all 16 DTMF characters in sequence. Verify that they are all correctly decoded.

```
[Oct 30 16:25:29] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 1
[Oct 30 16:25:29] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 2
[Oct 30 16:25:30] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 3
[Oct 30 16:25:31] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 4
[Oct 30 16:25:31] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 5
[Oct 30 16:25:32] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 6
[Oct 30 16:25:33] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 7
[Oct 30 16:25:33] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 8
[Oct 30 16:25:34] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 9
[Oct 30 16:25:36] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char 0
[Oct 30 16:25:36] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char *
[Oct 30 16:25:37] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char #
[Oct 30 16:25:38] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char A
[Oct 30 16:25:39] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char B
[Oct 30 16:25:39] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char C
[Oct 30 16:25:40] NOTICE[355]: chan_simpleusb_generic.c:2717 simpleusb_read: Got DTMF char D
     -- Hungup 'DAHDI/pseudo-488850447'
N8AR-44230*CLI> █
```

3. Key your radio and send *A1. Verify that you hear the IP address of your node played back by BRIAN to your radio.

4. The following table contains most of the DTMF commands preconfigured in the HamVOIP Allstar distribution. Watch what is displayed by the Asterisk client as you test one or more of them.

Command	DTMF Example	Function
*1<node>	*129789	Disconnect an Allstar node
*10	*10	Disconnect the last node connected
*2<node>	*229789	Connect an Allstar node – monitor only
*3<node>	*329789	Connect an Allstar node (note 1)
*51	*51	Macro to announce time and ID repeater
*70	*70	Announce the system status
*71<node>	*7129789	Disconnect a permanently connected node
*72<node>	*7229789	Permanently connect specified node - monitor only
*73<node>	*7329789	Permanently connect specified node - transceive
*75	*75	Announce complete system status
*76	*76	Disconnect all nodes
*77	*77	Reconnect nodes disconnected with "disconnect nodes"
*78<node>	*7829789	Permanently connect specified node - local monitor only
*79	*79	Last node to key up
*80	*80	Play N8SL repeater ID
*81	*81	Announce time of day
*82	*82	Say 24 hour time
*A1	*A1	Announce IP address assigned to your node
*A5	*A5	Say registration status of your node
*B6	*B6	Restart Asterisk

Note1 – Node 29789 is the N8SL Repeater in South Lyon, Michigan.

5. Type **exit** to exit the Asterisk client and return to the Admin Menu.

Enabling the COS LED

BRIAN has five status LEDs on his front panel. They are;
SOLID GREEN – Indicates BRIAN is receiving 5 VDC from the Pi
SOLID GREEN indicates that power is applied to the internal radio.
BLINKING GREEN – Indicates that Allstar is communicating properly with BRIAN
YELLOW – Lights when BRIAN is receiving an RF signal
RED – Lights when BRIAN is transmitting

You also may have noticed that the YELLOW LED is not lighting up when a signal is being received. The YELLOW COS LED can be driven by Allstar to show the presence of a received signal. This uses bit 4 of the CM119B. To use it you must configure your Allstar to use the bit defined for the COS LED. The current HamVOIP image download may have the required code already installed in the config files but they must be uncommented to be active. If the lines are not already installed you must add them. Check first! Here is the procedure to enable the COS LED.

1. In MobaXterm, in the left "File Browser" panel, note that the window at the top shows */root/*
    Left click on the green folder icon with the up-arrow in it until you have a "/" in the window.
    Double click on the etc folder. Double click on the asterisk folder. You will now have
    /etc/asterisk/ in the window.

2. Double click on the rpt.conf folder to open it in the MobaXterm editor**.**

3. Verify that there is a statement near line 159 which says
    events=eventsXXXXX where XXXX is your node number. If there is a semi-colon in front of it, remove it.

4. Verify that there is a statement near line 906 which reads
    [eventsXXXXX] where XXXXX is your node number. If there is a semi-colon in front of it, remove it.

5. Look for two lines below the **[eventsXXXXX]** which state
    cop,62,GPIO4:1 = c|t|RPT_RXKEYED
    cop,62,GPIO4:0 = c|f|RPT_RXKEYED
    They will probably have semi-colons in front of them. If so, remove them.

6. In the MobaXterm editor click on File>Save and click on Yes to save the file to your Allstar node.

7. In the Admin Menu, reboot the node (Item 15)

8. Transmit to your node and verify that the YELLOW COS LED is operational.

Address Reservation and Port Forwarding

At this point, your node is operational and can make outgoing connections. However, other nodes will not be able to connect to you until you log into your router and forward port 4569 (UDP) to your Raspberry Pi.   Also, unless you reserve the IP address assigned to your Raspberry Pi by your router's DHCP function, it might change at a later time.

Address reservation and port forwarding is router specific. Consult your router documentation for specific instructions.