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DVSwitch on the HamVoip AllStar Node

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Who learned this from Brad - N8PC and James - AA5PD

I can not stress the first point enough. **MAKE A BACKUP COPY OF YOUR CURRENT ALLSTAR SD CARD NOW!!!**

This step has saved me SOOOOOO much grief in the past after learning the hard way. If you break your node the backup SD card image will get you back to square one and back on the air right away.

Ok, with that said let's go drive ourselves crazy.

Before you begin anything you MUST have a DMR ID issued by RadioID.net and you must have a Brandmeister account already setup. And you must have already logged into that Brandmeister account and entered in a HotSpot security password in the Selfcare section. If you have already completed these steps you can continue.

First things first. SSH into your node and hit option 1 and do a System Update. Next for good measure, hit option 13 and restart the ASTERISK server.

Now you can hit number 9 and get to the BASH SHELL INTERFACE. Once you are at the command line you need to type cd and hit enter to ensure that you are in the root directory.

Once there type in this command and run it:

```
bash <(curl -s http://dvswitch.org/hamvoip)
```

This will download the install file needed and uncompress it. This version was made to be used on a fresh install of HamVoip but it can also be installed on a configured version as well. Once it is downloaded and installed, reboot the entire node.

Once rebooted we need to change the directory.

```
cd /usr/local/dvs/
```



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Once there type dvs to run DVSwitch

Once there it will ask you some initial setup information like language and you can answer it and then get to the main menu and do a basic setup of DVSwitch.

Watch the video closely for the areas you need to enter your Brandmeister information into

The initial setup will ask for Callsign DMR ID and CCS7/DMR ID plus a 2 digit number. If you have ever set up Brandmeister or TDIF DMR networks on a PiStar you know that there must be an extra two digit number that you come up with to add onto the end of your seven digit DMR ID number, sometimes referred to as an SSID or 2 digit suffix. This two digit suffix number can be 00 to 99 as long as it is not being used on another device.

The D-Star and NXDN sections can be left at the default as this tutorial is just for a Brandmeister DMR configuration.

The USRP Port can be left at default

Then the Input settings will be shown for the Analog_Bridge.ini and then you can hit YES to continue.

Then you will be prompted to select your local Brandmeister Server. Scroll down the list with your down arrow on your keyboard and once you have your selection highlighted then hit the TAB key to get to the OK button and hit enter. *(It's okay to pick a Brandmeister server here, we will be changing it to TGIF very soon.)*

Here you will be prompted to enter your Brandmeister Selfcare password that you would have set up in your Brandmeister account under the selfcare section in the HotSpot Security window. This must be done before starting this process. The default will be passw0rd, but you must remove it and enter your hotspot security password that you created.

Next is the hardware VOCODER (AMBE) menu

This part can be just a tad tricky, at least it was for me.

Just down arrow to "No Hardware Vocoder Use Software Vocoder" and hit enter.



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Then you will get the Input Finished menu and you can just hit enter. Then DVSwitch will Process the Initial Configuration and start the DVSwitch services.

Then at the Main Menu select option 2 for "Advanced Configuration - TG/Ref Manage, Macro, DMR Networks"

TG = Talkgroup

Ref = Reflector

Macro = Macro

DMR Networks = Brandmeister, TGIF, DMRplus, etc.

You can enter into menu [21] for the Freq, Pwr, Lat, Lon information. I do not think it is required but it may help you later for reference if you have to do any troubleshooting.

Now you can enter into menu [22] to configure Favorite TG/Ref and once inside that menu you can make changes to the favorites list under each digital service. I don't know much about this yet. BUT once I looked it all over I did go ahead and select menu [6 to PUSH TO DVSM/UC]. I am not exactly sure what that means but once I do I will update this tutorial.

Then I goto to number [8 BACK] and return to the previous menu.

I don't mess with menu number [23 Ad Hoc Menu & Marco] so I skip on down to menu [24 for Additional DMR Networks]

The first option is to Change Default DMR Server. It's always good to select this and select [2 TGIF] then tab to OK and hit enter and let the server make it's changes. Then go down to number [3] and hit enter to return to the previous menu.

Now hit number [2 to Configure DMR Server]

Then hit menu [3] for TGIF Network then it will show you the current settings and if they are correct then you can indicate **NO** to not make any changes or you can indicate **YES** to make changes.

The first choice if the next menu is the server address for TGIF and the default entry is the correct one.



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Input

IP or DNS of TGIF Server

tgif.network

<Ok> <Cancel>

So you can tab to <OK> from here and continue.

Input

Password of TGIF Server

passw0rd

<Ok> <Cancel>

The next menu is asking for the TGIF Server password and this is the password in the TGIF Selfcare menu as seen in the next figure:



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TGIF Network Monitoring ▾ Help ▾

If you regenerate a new Security Key,
you will have to put it into your hotspot

DMR ID: 3143399

Hotspot Security Key

Return to this menu and enter the Hotspot Security Key here:

Input

Password of TGIF Server

passw0rd

<Ok> <Cancel>

Tab down to <Ok> and hit enter and you will be here:



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Port of TGIF Server

62031

<Ok> <Cancel>

This is the default port for the TGIF server, do not change this, then TAB down to <Ok> and continue. The Server will accept the changes and then you will see this:

Finished

<Ok>

Hit <Ok> and you will return to the Configure DMR Server menu.

Once you are back to the Configure DMR Server menu you can down arrow to item [6] and go back to the previous menu then down arrow to menu [3 Back] to goto the previous menu then



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menu [25 BACK] to goto the MAIN MENU. then scroll down to [5 EXIT] and this will exit you from DVSwitch menu altogether.

This will bring you back to the command line. This is where I like to reboot the entire node. I may not be required, but I do it for peace of mind.

Once the AllStar server has rebooted you can take this opportunity to open a web browser and type in the ip address of your AllStar node and then a forward slash and then the word dvswitch, (ex. <http://xxx.xxx.xx.xxx/dvswitch>) This will bring up something like this:

DVSwitch Dashboard

RX Monitor

Status

Analog Bridge Info

Callsign	KDSFMU
GW ID	3143399
RPT ID	314339915
Mode	DMR
Tx TG	3143399
AB ver	1.6.4

TRX Info

Listening

DMR Master

TGIF Network

YSF Net

Not Linked

P25 Net

Not Linked

NXDN Net

Not Linked

D-Star Net

IRC rr.openquad.net

Not Linked

Gateway Activity

Time (UTC)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER
16:59:53 Feb 12	DMR	KDSFMU	TG 3143399	LNet	2.7	---	---
15:26:10 Feb 12	DMR Slot 2	KDSFMU	TG KDSFMU	Net	1.2	0%	0.0%
07:00:35 Feb 12	D-Star	KDSFMU/INFO	CQCQCQ	Net	2.5	0%	0.0%

Local Activity

Time (UTC)	Mode	Callsign	Target	Src	Dur(s)
16:59:53 Feb 12	DMR	KDSFMU	TG 3143399	LNet	2.7

Modes

DMR YSF NXDN P25 D-Star Networks DMR Net YSF Net NXDN Net P25 Net D-Star Net

Hardware Info

Hostname	Kernel release	Platform	Disk used	Memory used	CPU Load	CPU Temp
IP: 192.168.1.203 alarmpi	5.4.75-1-ARCH	Uptime: 10 hrs, 33 mins Unknown ARM based System	55%	3%	0.5 / 0.4 / 0.3	36°C / 97°F

This is the DVSwitch Dashboard that has been installed with the DVSwitch server software. It just basically lets you know what is up and running and the status of DVSwitch. If you click on the RX Monitor button you will be able to hear the DMR traffic through your computer speakers as it is processed.



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You can now SSH back into your node and choose menu number 9 and start a Bash Shell interface. Make sure you are still in the DVSwitch directory if you are unsure you can use this command:

```
cd /usr/local/dvs/
```

Then type the work dvs to launch the DVSwitch server menu.

Now you are going to want to go to menu [3 TOOLS] and hit enter. And then goto menu [32 Configure .ini files].

Hit menu [1 for Edit Analog_Bridge.ini] then once inside the ini file down arrow until you get to the section that states:

"The metadata below is used when ASL is the source since it does not have any concept of digital modes"

Then down arrow to the line that starts out with txTg= an then enter the TGIF talkgroup number here. I used 3143399 since it is my Digital ID number. So if you want to connect to TGIF Talkgroup 3100 you would type 3100 here.

Then down arrow to the [USRP] stanza and we will make some audio settings changes that will help make your voice a little more understandable in analog.

Go to usrpAudio and change it to **AUDIO_USE_GAIN**

Change usrpGain = **3**

Comment out **usrpAGC = -20,10,100** - This is accomplished by placing a semicolon in front of the line to deactivate it.

Change tlvAudio to **AUDIO_USE_GAIN**

tlvGain = **0.35**

Once this is done you can do a CTL+X and hit Y to save and enter to exit.

Next you can goto menu number 2 Edit MMDVM_Bridge.ini and just take a look around and make sure your TGIF Selfcare Security password is correct.



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If everything is okay or you make any changes, once you are done just hit CTL+X and Y to save and enter to exit.

Then down arrow to menu [8 Edit DVSwitch.ini] select it and then scroll down to the [DMR] stanza to the line that says "exportTG = 0"

```
; Configure the DMR Partner
; Audio format is AMBE 72 bit
[DMR]
address = 127.0.0.1          ; Address to send AMBE TLV frames to (export)
txPort = 31100              ; Port to send AMBE TLV frames to (export)
rxPort = 31103              ; Port to listen on (import)
slot = 2                    ; Export slot
exportTG = 0                ; Which TG to export
hangTimerInFrames = 0       ; Use 50 for 3 seconds of hang time (3000 / 60)
talkerAlias = %callsign %location %description ; Get callsign location and description from MMDVM_Bridge.ini
```

Change the 0 (zero) to the same Talkgroup number you typed into the Analog_bridge.ini file previously.

Once this is done hit CTL-X Y to save and enter to exit.

Down arrow to number [9 BACK] and return to the previous Menu.

Then you can down arrow to menu [37 and Reboot RPi Server]. This will reboot your entire AllStar Node.

Once your Node reboots go back to Menu #9 and start another Bash Shell Interface. We will need to make sure a few things have been done. As you seen in the beginning of the video we need to ensure that the proper changes have been made in **allmon.ini** and **manager.conf** and **rpt.conf**

First goto `/etc/asterisk/`

Then **nano manger.conf** and scroll down to the **admin** stanza close to the bottom. In the line that starts with secret = you should see that the password has had some strange letters placed in front of your original password, (example: if you originally put the password of **Password2024** as the secret there will now be an addition of **llcgiPassword2024**. Take the strange letters out so that your password is back to it's original form and save and exit the file. (CTL+X, Y to save and enter to exit)



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Once you are back to the command line then we need to change directory to

```
cd /srv/http/supermon/
```

Then nano **allmon.ini**

```
GNU nano 2.5.3 File: allmon.ini

[576333]
host=127.0.0.1:5038
user=admin
passwd=Password2023
menu=yes
hideNodeURL=no

[1999]
host=127.0.0.1:5038
user=admin
passwd=Password2023
menu=yes
hideNodeURL=no

[All Nodes]
nodes=576333,1999
menu=yes
```

I like to make sure that the **passwd=** in both node stanza's are the same. I do not know if this is necessary but I do know that my configuration works. Then goto the [All Nodes] stanza and make sure the nodes= is your Primary node then a comma then your private node number. Ex: nodes=576333,1999 with no spaces just as pictured above. This gives you the menu option on your Supermon page. Once finished hit CTL+X, then Y to save and enter to exit.

Now comes the fun part. We must paste in some lines to the private node stanza in the rpt.conf file. **Make a backup of your rpt.conf file before making any changes in case something goes wrong.**

As I have mentioned before I like to use FileZilla to do this so it is a little easier to modify the file. See video for details.

Once you have the **rpt.conf** file open in the text editor you must paste in these lines Thank EXACTLY as they appear here. Yes they may be a better way, I just know this configuration works for me more than 4 times now.



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These lines must be pasted in right after this line

```
;rxchannel=Radio/usb1999
```

; Example usbradio channel driver

And it has to be before this line entry:

```
rxchannel=dahdi/pseudo
```

; Example pseudo channel driver

(See next page for the lines that need to be copied and pasted)

(continued on next page)



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rxchannel=USRP/127.0.0.1:34001:32001

duplex=0

hangtime=0

althangtime=0

holdofftelem=1

telemdefault=0

;telemdynamic=0

eannmode=2

linktolink=no

nounkeyct=1

;totime=180000

;idrecording=/etc/asterisk/local/node-id

;idtalkover=|ie

archivedir=/var/log/asterisk/tmp/

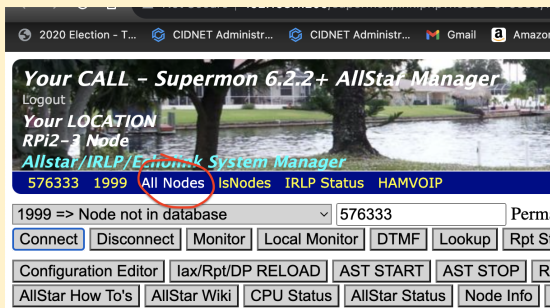
Once they are pasted in then you can save the file and make sure it is uploaded back into the AllStar node. Then I like to reboot the node just for good measure.



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Once your node has rebooted then you need to log into your Supermon or Supermon2 and then select ALL NODES from the top menu. *(The example shown here is Supermon)*



So that you can see both your Public node and Private Node like this:

AllStar How To's | AllStar Wiki | CPU Status | AllStar Status | Node Info | Active

Archive | GPIO | Linux Log | AST Log | Connection Log | Web Access Log | W

[alarmpi] [WAN IP: [47.217.204.249](#)] [LAN IP: 192.168.1.205] [AstP: 4569]
[Sunday, September 3, 2023 CDT 10:53:51 up 4 min, 1 user, load average: 0.23]

Display Configuration [CPU: **90°F, 32.6°C** @ 10:53]

[Weather conditions for Your LOCATION 33904: **84°F, 29°C / Mostly Sunny**]

Node 576333 => KD5FMU 146.400 Trainer Node Bubble Chart IsNodes						
Node	Node Information	Received	Link	Direction	Connected	Mode
576333	Idle					
1999	Node not in database	001:00:26	ESTABLISHED	IN	01:45:02	Transceive

Private Node 1999 => Node not in database IsNodes						
Node	Node Information	Received	Link	Direction	Connected	Mode
1999	Idle					
576333	KD5FMU 146.400 Trainer Node	001:44:55	ESTABLISHED	OUT	01:45:02	Transceive

-

System maintained by: Your NAME, Your CALL

Then goto the node selection menu and change it to the Private node and type in the number of the Primary node in the text box window and click on the Connect button and see if the two nodes connect, one to the other.



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Your CALL – Supermon 6.2.2+ AllStar Manager
Logout
Your LOCATION
RPI2-3 Node
Allstar/IRLP/Echolink System Manager
576333 1999 All Nodes IsNodes IRLP Status HAMVOIP

1999 => Node not in database 576333 Permanent

Connect Disconnect Monitor Local Monitor DTMF Lookup Rpt Stats

Configuration Editor Iax/Rpt/DP RELOAD AST START AST STOP RESTAR

AllStar How To's AllStar Wiki CPU Status AllStar Status Node Info Active

Archive GPIO Linux Log AST Log Connection Log Web Access Log W

[alarmpi] [WAN IP: 47.217.204.249] [LAN IP: 192.168.1.205] [AstP: 4569]
[Sunday, September 3, 2023 CDT 10:53:51 up 4 min, 1 user, load average: 0.23]

Display Configuration [CPU: 90°F, 32.6°C @ 10:53]
[Weather conditions for Your LOCATION 33904: 84°F, 29°C / Mostly Sunny]

Node 576333 => KD5FMU 146.400 Trainer Node Bubble Chart IsNodes

Connected:

Display Configuration [CPU: 90°F, 32.6°C @ 10:53]
[Weather conditions for Your LOCATION 33904: 84°F, 29°C / Mostly Sunny]

Node 576333 => KD5FMU 146.400 Trainer Node Bubble Chart IsNodes						
Node	Node Information	Received	Link	Direction	Connected	Mode
576333	Idle					
1999	Node not in database	001:04:59	ESTABLISHED	IN	01:49:35	Transceive

Private Node 1999 => Node not in database IsNodes						
Node	Node Information	Received	Link	Direction	Connected	Mode
1999	Idle					
576333	KD5FMU 146.400 Trainer Node	001:49:28	ESTABLISHED	OUT	01:49:35	Transceive

System maintained by: Your NAME, Your CALL

Now your AllStar node should be passing audio to your TGIF Talkgroup and vice versa. Note: It may take TGIF 1 to 5 minutes (sometimes) to synchronize with your AllStar node.

(continued on next page)



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****SPECIAL NOTICE****

When you originally set up your AllStar node you had the choice to keep the default bind port of 4569. If you kept the default bind port of 4569 then there is nothing more you need to do. BUT if you did select a non-standard bind port then there is one more step to complete in the **rpt.conf** file.

Open your rpt.conf file in FileZilla or other Client software of your choice or you may wish to return to the SSH Session in the Bash Shell interface and go to the /etc/asterisk/ directory and nano into the rpt.conf file. Either way scroll down to the very bottom of the file until you see the [nodes] stanza:

```
[nodes]
; Note, if you are using automatic updates for allstar link nodes
; no allstar link nodes should be defined here. Only place a de
; for your local (within your LAN) nodes, and private (off of a
; link) nodes here.

576330 = radio@127.0.0.1:4570/576330,NONE
1999 = radio@127.0.0.1:4570/1999,NONE

#includeifexists custom/rpt.conf
```

If your Primary node is 576330 you will have to add the new non-standard port designation behind the 127.0.0.1 ip address for example:

```
576330 = radio@127.0.0.1:4570/576330,NONE
```

And the same for your Private node number as shown in the figure above.

Keeping in mind you will use the port that YOU used, not the example shown here. If you chose 4566 then your entry would look like this example:

```
576330 = radio@127.0.0.1:4566/576330,NONE
```

Make sense? *(continued on next page)*



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If it doesn't work, double check all your settings and start asking questions. Hope this works for you on the first try.

73 and "Ham On Y'all !"

