Newsletter November 2023 – 31th Edition

In this edition:

1) DTMF Remote control codes for ircDDBGateway linking by John ZL2TWS.
2) MMDVM ZUM Radio 0.9 / 1.0 updates via SSH by John ZL2TWS.
3) Hotspot and Gateway Repeater active watch Updates - with Dashboard hosting.
4) ZL2VH-B KiwiDstar Update.

1) DTMF Remote control codes for ircDDB hotspot and gateway linking by John ZL2TWS

Note: *G3 is not enabled for this feature. It does not work for G3 Gateways unless the G3 sysop has installed the ircDDB Add-On for call sign routing.*

D-Star users might not be aware of the DTMF functionality it has over any other DV system.
The only exception is the Yaesu System Fusion (YSF) that uses DTMF to connect and disconnect from the YSF propitiatory rooms.
At the time of writing this YSF is very much a Yaesu only system with DTMF limited to use in their rooms.
With an exclusive D-Star ircDDB based Gateway / Hotspot, a combined G3 DPlus / ircDDB system or G3 with Add-On users might like to experiment with leaving CQCQCQ in their UR field and only using DTMF from the hand set microphone or menu of the ID-51 / ID-52 / ID-31 hand held.
DTMF is easier than you think to program into these hand held radios.
Listed below are the DTMF commands to use.

DTMF Command	Equivalent UR Command	Comment.
B2A or B002A	XRF002AL	Link to DExtra reflector XRF002 A
B757A	XRF757AL	Link to DExtra reflector XRF757 A
*1C or *001C	REF001CL	Link to DPlus reflector REF001 C
*30C or *030C	REF030CL	Link to DPlus reflector REF030 C
D299B	DCS299BL	Link to DCS reflector DCS299 B [XLX299 B]
D29910	DCS299JL	Link to DCS reflector DCS299 J [XLX299 J]
#	_____U	Unlink
0 or 00	_____I	Return status Info voice announcement

An example to try is *091C. Key up the radio and use a DTMF microphone key pad or another DTMF tone generator source. Un-key the radio and wait for the linked to message.

This is equivalent to UR:REF091CL and connects to Reflector REF091 C
Also D299B will connect you to DCS299 B and alleviates the cumbersome use of the
UR:DCS299BL [DCS299BL links to XLX299 B]
Use # to Unlink and 0 (zero) to get status (Info)(_____I)

An example to try using when the module number is not A, B, C or D is DCS299 J.
No J on the key pad? No problem all you do is follow the alphabet with A=01, B=02, C=03,
D=04, E=05, F=06, G=07, H=08, I=09, J=10, K=11, L=12 and so on until Z=26 is reached to
link to any of the twenty six ircDDBGateway modules.

Try linking to the D-Star national system D-Star only module J using B29910 (XRF299JL) or
D29910 (DCS299JL) This links to XLX299 J using the DCS protocol.
Use # to Unlink and 0 (zero) to get status (Info)(_____I)

If you want to try REF protocol then key in *29910 (REF299JL)
To link to XLX299 O using DCS protocol key in D29915.

Use # to Unlink and 0 (zero) to get status (Info)(_____I)

How easy is D-Star to use? Like no effort at all so let's get talking!

2) [ZumRadio-MMDVM-V0.9 Firmware update](#). John ZL2TWS November 2023

Upgrading my ZUM Radio V0.9 RPi-HAT for remote repeater use,
(Not an RF model with antenna) to the latest firmware may have fixed a few timing and audio
level issues however I couldn't find a change log that specifically listed the changes. I was able
to find at https://github.com/g4klx/MMDVM that fixes dealing with timing, various audio
tweaks, calibration settings, filtering, along with FM and M17 changes were added.

Hardware and software used for my upgrade: Pi3 and using Pi-Star V4.1.6.
(Do not use on beta versions)
This worked for my ZUM Radio-MMDVM-V0.9 but no guarantee about other models.

First thing to do is to find out details about your current ZUM Radio MMDVM.
Do you actually need to upgrade in the first place?
From Pi-Star SSH enter this:
sudo pistar-findmodem
My report looked like this after the upgrade:
Detected MMDVM Port /dev/ttyAMA0 (GPIO) baud:115200 Protocol V1
modem data: MMDVM 20210101 (D-Star/DMR/System Fusion/P25/NXDN/POCSAG/FM)
12.000 MHz GitID #34cbff4

Take a picture or write this down before proceeding.

Build the firmware and upload to MMDVM-Pi
Installation of necessary software (only once)

If you are using Pi-Star SSH, expand filesystem (if you haven't done before):
sudo pistar-expand
Then: sudo reboot
Back to SSH
Enable (rw) filesystem if you are using Pi-Star: rpi-rw

Update list of packages:
sudo apt-get update
Install toolchain and necessary packages:
sudo apt-get install git gcc-arm-none-eabi gdb-arm-none-eabi libstdc++-arm-none-eabi-newlib
autoconf libtool pkg-config libusb-1.0-0 libusb-1.0-0-dev

If you get "cannot resolve host" error when downloading the packages.
Do the following:sudo nano /etc/resolv.conf
Enter the following on a new line: nameserver 8.8.8.8
Ctrl-O and Ctrl-X to save and exit.
Now you can download the packages without getting that error.

Remove libi2c-dev and stm32flash packages if you are using Pi-Star SSH:
sudo apt-get remove libi2c-devsudo
apt-get remove stm32flash
Install the latest stm32flash:
cd ~
git clone https://git.code.sf.net/p/stm32flash/code stm32flash
cd stm32flash
make
sudo make install

FYI. Another place to get the lastest stm32flash is:
https://sourceforge.net/projects/stm32flash/files/

MMDVM firmware compilation and uploading for MMDVM-Pi
Download firmware sources:
cd ~
git clone https://github.com/g4klx/MMDVM
cd MMDVM
git submodule init
git submodule update

Edit Config.h according your preferences if required:
nano Config.h

You can select for example lines like these:
#define EXTERNAL_OSC 12000000 (disable any external TCXO)
#define STM32F1_POG
#define ARDUINO_DUE_ZUM_V10 (this option doesn't matter for STM32 devices)
// #define MODE_LEDS
// #define SEND_RSSI_DATA
// #define SERIAL_REPEATER
#define USE_DCBLOCKER
#define USE_ALTERNATE_POCSAG_LEDS
#define USE_ALTERNATE_FM_LEDS

Compile:
make pi

If you are using Pi-Star SSH then, stop services:
sudo pistar-watchdog.service stop
sudo systemctl stop mmdvmhost.timer
sudo systemctl stop mmdvmhost.service

Upload the firmware:
sudo make deploy-pi

Be patient, some steps takes a bit of time during which it doesn't look like anything is happening.

3) Hotspot and Gateway Repeater active watch Updates - Dashboard hosting.
This is a listing of High Power Hotspots and Gateway Repeaters you can connect to.
NOTE: At the time of publication the URL's listed below were checked and active.
 Their status may have changed since publication due to temporary outage or update.
See this link:
https://zl2vh.org.nz/assets/pdf/other/new-zealand-d-star-gateways-hotspots.pdf

4) ZL2VH-B KiwiDstar Update.
No remote link radio has been finalised yet but we are working on getting a modified Motorola
UHF transceiver. Brian ZL1HN is helping us with a solution.
Link is going to be via a traditional GMSK DVRPTR-V1 modem and a high speed
9k6 compatible radio such as a Motorola.
A parallel upgrade has been taking place between an SD and eMMC card version.
Paul ZL1UHX has made changes to the SD version while John ZL2TWS makes the same
parallel changes to the eMMC version.

The following have been successfully implemented.
- Odroid cooling fan persistent settings so that changes made are reloaded at boot time.
- Apache2 web server shutdown and lighttpd web server moved to port 80.
- ddns.net auto update so that when the IP address changes, zl2vh-b.ddns.net is updated.
- Investigate kernel update to Lubuntu 14 in preparation to enable Odroid watchdog.
- Odroid watchdog can take care of the hotspot automatically to restart if needed.

G3 Gateways, US Trust DSync monitor and ircDDBGateways.
NOTE: At the time of publication the URL's listed below were checked and active.
        Their status may have changed since publication due to temporary outage or update.

G3 Gateways and G3 with ircDDB addon - Repeaters:
~~Auckland Klondyke ZL1VLD.~~ ~~https://zl1vhd.dstar.org.nz/~~ ~~(DPlus) ZL1VHD B [438.175-RPTR]~~
~~Auckland Klondyke ZL1VLD.~~ ~~https://zl1vhd.dstar.org.nz/~~ ~~(Dplus) ZL1VHD C [145.650-RPTR]~~
Auckland ZL1ZLD. https://spamnz.zapto.org/ (Dplus) ZL1ZLD A [1293.625-RPTR]
Auckland ZL1ZLD. https://spamnz.zapto.org/ (Dplus G3 with ircDDB addon) [439.575-RPTR]
Auckland ZL1ZLD. https://spamnz.zapto.org/ (Digital Data) [1294.625-RPTR]
Te Puke. http://202.36.75.248:40001 (DPlus G3 with ircDDB addon) [145.725-RPTR]
Hamilton ZL1HND. http://zl1hnd.d-star.nz (Dplus) ZL1HND B [439.450-RPTR]
Wellington ZL2VH. https://123.255.47.67 (Dplus) ZL2VH C [145.425 RPTR]

US Trust DSync monitor:
https://dsync.dstarusers.org/

ircDDBGateway - Repeaters:
Hamilton. http://zl1cct.d-star.nz (DPlus, DExtra & DCS) **CCS7 8530100** [145.350-RPTR]
Kapiti ZL2KB. http://zl2kb.ddns.net:8080. ZL2KB C (DPlus, DExtra & DCS) [145.300 RPTR]
Wellington ZL2VH-B. http://zl2vh-b.ddns.net
  CCS7 8530304 [DPlus, DExtra & DCS) [860-RPTR]

New Zealand XLX Multimode Reflector www.xlx299.nz
ircDDB Status for ZL: https://status.ircddb.net/cgi-bin/ircddb-gw?NZL

Examples of hotspots with dashboards that you can view and connect to this month:

    ZL1TOB (http://zl1tob.ddns.net:83)
    ZL1AMK (http://zl1amk.ddns.net:82)
    ZL3TJH (http://zl3tjh.ddns.net:83)

Other Gateway Repeater Hotspots of interest:
ZL2AUS is running the WPSD Pi-Star variant for MMDVM
    http://www.zl2aus.co.nz

Dashboard - DDNS naming convention.
    PiStar: http://callsign.ddns.net
    Note: PiStar uses port 80 by default and not required to be added to the end of the address
    line.

KiwiDstar Hotspots: http://callsign.ddns.net:82
    UDRC Compass Hotspots: http://callsign.ddns.net:82
    Hotspots that cannot use port 80 or 82 use port 83 (example is http://zl3tjh.ddns.net:83) and
    http://zl1tob.ddns.net:83)

Host files that include ZL gateways and hotspots can be downloaded from here:
   http://zl2vh.org.nz/assets/d-star-hosts/

D-Star Nets to join
   http://www.dstarinfo.com/nets.aspx

Kiwi-D-Star Net on XLX299 J (D-Star only channel)

Sites Reference information:

   ZL2VH Web site. http://zl2vh.org.nz/d-star/

For US Trust G2 Registration go here: http://zl2vh.org.nz/d-star/gateway/

Previous D-Star newsletters FREE to download:
   http://zl2vh.org.nz/d-star/newsletter/2015/
   http://zl2vh.org.nz/d-star/newsletter/2016/
   http://zl2vh.org.nz/d-star/newsletter/2017/

73 and good DV. John ZL2TWS for Branch 63 NZART.