

Odroid XU4 Ubuntu LXDE 14.04 LTS configuration.

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The following explains how to install D-Star G4KLX and DG9VH dashboard onto the XU4 LXDE image.

The XU4 image was downloaded from the Hardkernel website download section. (Reference below)

NOTE: Only use the eMMC supplied with the XU4 and do not format or erase it. There is a special hidden boot loader that is lost if you erase the eMMC. Simply use Win32DiskImager to transfer the image.

The eMMC used is 8GB or 16GB in size.

After D-Star is fully installed as below the updates and distribution upgrades can be applied.

Do this using `$ sudo apt-get update` and `$ sudo apt-get dist-upgrade` commands.

Check Gparted for eMMC usage details. Around 5.4GB used and 1.5GB spare.

It is therefore important to save space on an 8GB eMMC only by doing the following.

To get back space (after you install everything as below) you can uninstall 'abiword' word processor, 'pidgin' messenger, 'GDebi' Debian package installer and their associated data files using the Synaptic Package manager. These are not used for normal operation. You can also run `sudo apt-get autoremove` and `sudo apt-get clean` to remove old install files and clean the cache. Gparted should then report around 4.6GB used and 2.5GB free.

This document should be used as a guide as some settings or libraries might require a change or update.

If things do not work for you at first then take time out, research on the InterWeb or consult with others in the D-Star community.

Installing G4KLX software from instructions given at <http://www.dstar101.com/Linuxcompile.htm>

You need to perform this install with an account that is capable of running as Super User (su or sudo)

If you installed the OS then you are probably "good to go", if you didn't it may be worth checking first.

As of January 2014, the whole PC Repeater Controller has changed somewhat, in that some DStar components, such as DVAPnode and DVRPTRRepeater, are now integrated into dstarrepeater. However this in no way changes the manner in which the software is compiled on a Linux computer. The instructions below will still work.

The compile and install process for both of these applications is very similar. These instructions are for Ubuntu, however a little common sense and you can work through this in other Debian based versions that use different GUIs.

First thing that you need to do is register on Yahoo Groups, and join the [Pcrepeatercontroller](#) and the ircDDBGateway groups, tell the moderator why you want to join, and add your callsign to the request if you have one. Once registered and accepted go to the Files section of the group webpage, look for a folder release, open that and download the latest zip file for each application. DstarRepeater, ircDDBGateway and DummyRepeater.

Use archive manager to unzip the files, I suggest you accept the default folder name, and unzip to your home folder.

Before you proceed any further, you will need to install several libraries, sounds a lot harder than it is. In your Linux desktop do:-

Launch 'Synaptic Package Manager', how you launch this will depend upon the version of Linux.

You will be prompted for a password.

Now use the search facility to locate, and mark for installation the following packages (some of these may already be installed, don't panic).

wx2.8-headers
wx-common
libwxgtk2.8-0
libwxgtk2.8-dev
libwxbase2.8-0
libwxbase2.8-dev
portaudio19-dev
libportaudio2
build-essential
libusb-dev
g++
libusb-1.0-0
libusb-1.0.0.dev

Now you need to click on the Apply button for the files to be downloaded and installed. This may take a few minutes, so go get coffee, tea, etc.

As an alternative to the above, if you are comfortable with using the terminal:

Open a Terminal window `ctl+alt+t`

In the terminal window type (or cut and paste from here)

`sudo apt-get install wx2.8-headers wx-common libwxgtk2.8-0 libwxgtk2.8-dev libwxbase2.8-0 libwxbase2.8-dev portaudio19-dev libportaudio2 build-essential libusb-dev g++ libusb-1.0-0 libusb-1.0.0.dev`

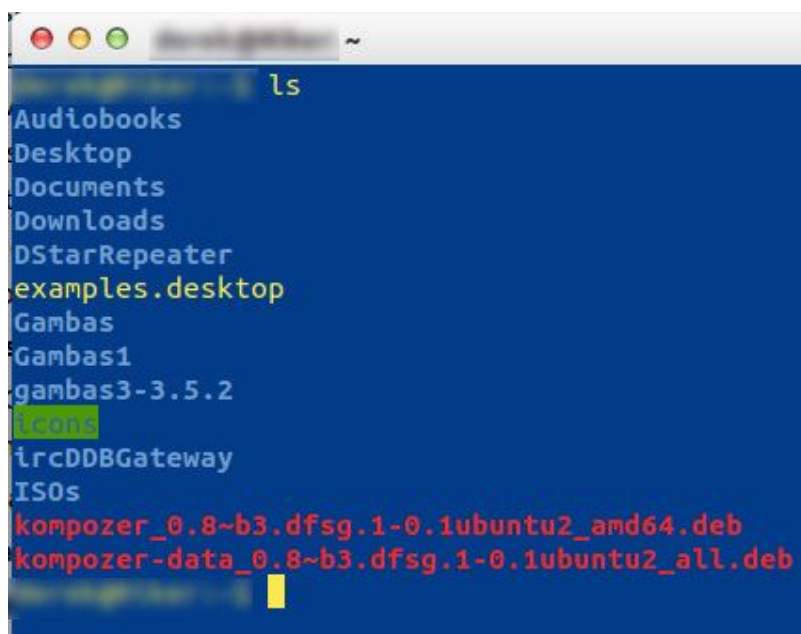
Now you are ready to compile the program and install. This requires some terminal work, don't worry its simple enough, if you're new to Linux just remember it is case sensitive to the syntax of anything you type in at the terminal.

Open a terminal window `ctl+alt+t`

You will see this prompt `odroid@odroid:~$`

At this stage you are in your Home directory, Type `ls` (`ls` means list) and hit return.

You will see a list of files and directories in your home folder.



```
ls
Audiobooks
Desktop
Documents
Downloads
DStarRepeater
examples.desktop
Gambas
Gambas1
gambas3-3.5.2
icons
ircDDBGateway
ISOs
kompozer_0.8~b3.dfsg.1-0.1ubuntu2_amd64.deb
kompozer-data_0.8~b3.dfsg.1-0.1ubuntu2_all.deb
```

Your listing may not look exactly the same, but you get the idea.

You should see a directory or folder called DStarRepeater.
To enter that folder type :
cd DStarRepeater, hit return. (cd means change directory).
Type ls again and you will see a list of files that are in the Repeater folder.

```
derek@Riker:~/DStarRepeater$ ls
Arduino                package.mk
BUILD.txt              settings_cubieboard_linaro_native.mk
CHANGES.txt           settings_debian_amd64.mk
Common                 settings_debian_armel.mk
COPYING.txt            settings_debian_armhf.mk
Data                   settings_debian_arm.mk
DStarRepeater          settings_debian_i386.mk
DStarRepeaterConfig    settings_default.mk
DStarRepeater.sln      settings.mk
LinuxUSB                settings_raspbian_armhf.mk
Makefile               settings_rpi.mk
package_default.mk     WindowsUSB
derek@Riker:~/DStarRepeater$
```

Type: make and hit return.

The compile will start, you will see lot's of info scroll up the screen.

Time for another tea or coffee.



```
~/DStarRepeater
/etc'' -DBIN_DIR="/usr/local/bin" -I/usr/lib/x86_64-linux-gnu/wx/include/gtk2-
unicode-release-2.8 -I/usr/include/wx-2.8 -D_FILE_OFFSET_BITS=64 -D_LARGE_FILES
-D_WXGTK__ -pthread -c AddressTextCtrl.cpp
g++ -O2 -Wall -Wno-non-virtual-dtor -Wno-strict-aliasing -DDATA_DIR="/usr/local
/etc'' -DBIN_DIR="/usr/local/bin" -I/usr/lib/x86_64-linux-gnu/wx/include/gtk2-
unicode-release-2.8 -I/usr/include/wx-2.8 -D_FILE_OFFSET_BITS=64 -D_LARGE_FILES
-D_WXGTK__ -pthread -c AMBEFEC.cpp
g++ -O2 -Wall -Wno-non-virtual-dtor -Wno-strict-aliasing -DDATA_DIR="/usr/local
/etc'' -DBIN_DIR="/usr/local/bin" -I/usr/lib/x86_64-linux-gnu/wx/include/gtk2-
unicode-release-2.8 -I/usr/include/wx-2.8 -D_FILE_OFFSET_BITS=64 -D_LARGE_FILES
-D_WXGTK__ -pthread -c AnnouncementUnit.cpp
g++ -O2 -Wall -Wno-non-virtual-dtor -Wno-strict-aliasing -DDATA_DIR="/usr/local
/etc'' -DBIN_DIR="/usr/local/bin" -I/usr/lib/x86_64-linux-gnu/wx/include/gtk2-
unicode-release-2.8 -I/usr/include/wx-2.8 -D_FILE_OFFSET_BITS=64 -D_LARGE_FILES
-D_WXGTK__ -pthread -c ArduinoController.cpp
g++ -O2 -Wall -Wno-non-virtual-dtor -Wno-strict-aliasing -DDATA_DIR="/usr/local
/etc'' -DBIN_DIR="/usr/local/bin" -I/usr/lib/x86_64-linux-gnu/wx/include/gtk2-
unicode-release-2.8 -I/usr/include/wx-2.8 -D_FILE_OFFSET_BITS=64 -D_LARGE_FILES
-D_WXGTK__ -pthread -c BeaconUnit.cpp
g++ -O2 -Wall -Wno-non-virtual-dtor -Wno-strict-aliasing -DDATA_DIR="/usr/local
/etc'' -DBIN_DIR="/usr/local/bin" -I/usr/lib/x86_64-linux-gnu/wx/include/gtk2-
unicode-release-2.8 -I/usr/include/wx-2.8 -D_FILE_OFFSET_BITS=64 -D_LARGE_FILES
-D_WXGTK__ -pthread -c CallsignList.cpp
```

The compile should finish without any issues, however if you get any errors, go and check that the libraries listed above are installed.

Now you have to install the program.

Still in the terminal window (you didn't close it did you?)

Type: `sudo make install`

hit return

You will be prompted for a password, type it in and hit return.

The programs will now be installed.

The usual location for the files to be installed in `/usr/local/bin`. You can get a listing of the files by typing:

`ls /usr/local/bin`

You should see something like this.

```
dstarrepeater      dvrptrrepeaterd  Link to dvapnode  starnetserver
dstarrepeaterconfig glances          remotecontrol     starnetserverd
dstarrepeaterd    gmskrepeater     remotecontrold    texttransmit
dummyrepeater     gmskrepeaterd    soundcardrepeater timercontrol
dvapnode          ircddbgateway    soundcardrepeaterd timercontrold
dvapnoded         ircddbgatewayconfig splitrepeater      timeserver
dvrptrrepeater   ircddbgatewayd   splitrepeaterd    timeserverd
```

OK so that's the DStarRepeater software compiled.

Now you need to compile and install ircDDBGateway.

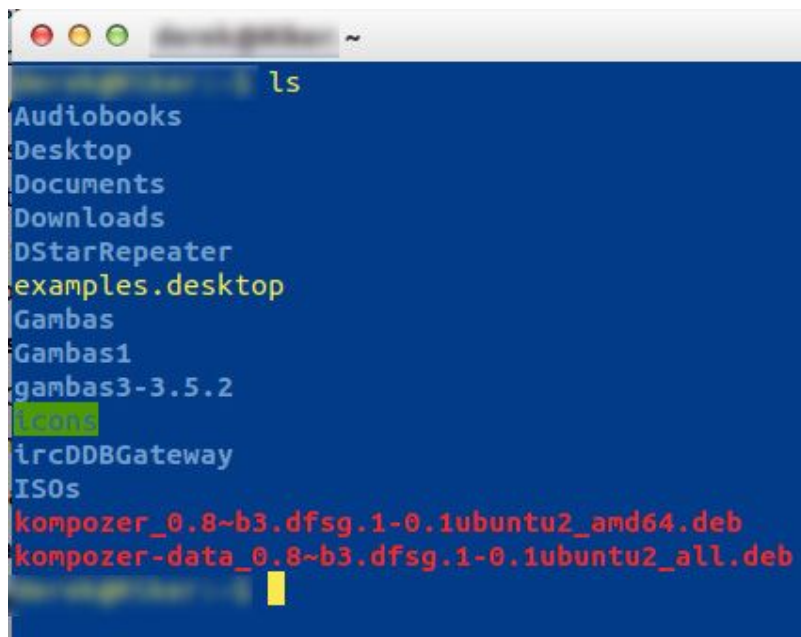
Open a terminal window: Applications Accessories Terminal. (*ctl+alt+t*)

You will see a prompt similar to

```
odroid@odroid:~$
```

At this stage you are in your Home directory, Type `ls` (`ls` means list) and hit return.

You will see a list of files and directories in your home folder.



```
ls
Audiobooks
Desktop
Documents
Downloads
DStarRepeater
examples.desktop
Gambas
Gambas1
gambas3-3.5.2
ircDDBGateway
ISOs
kompozer_0.8~b3.dfsg.1-0.1ubuntu2_amd64.deb
kompozer-data_0.8~b3.dfsg.1-0.1ubuntu2_all.deb
```

Your listing may not look exactly the same, but you get the idea.

You should see a directory or folder called `ircDDBGateway`.

To enter that folder type : `cd ircDDBGateway` hit return. (`cd` means change directory).

Type `ls` again and you will see a list of files that are in the `ircDDBGateway` folder.

```

~/ircDDBGateway
~/ircDDBGateway$ ls
BUILD.txt          Makefile          settings_debian_i386.mk
CHANGES.txt      package_deb.mk   settings_default.mk
Common            package_default.mk settings.mk
COPYING.txt       package.mk        settings_raspbian_armhf.mk
Data              RemoteControl    settings_rpi.mk
ircDDB            settings_debian_amd64.mk StarNetServer
ircDDBGateway     settings_debian_armel.mk TextTransmit
ircDDBGatewayConfig settings_debian_armhf.mk TimerControl
ircDDBGateway.sln settings_debian_arm.mk   TimeServer
~/ircDDBGateway$

```

Type: make and hit return.

Time for another tea or coffee.

The compile should finish without any issues, however if you get any errors, go and check that the libraries listed above are installed.

Now you have to install the program.

Still in the terminal window (you didn't close it did you?)

Type: sudo make install

hit return

You will be prompted for a password, type it in and hit return.

The programs will now be installed.

The usual location for the files to be installed in /usr/local/bin. You can get a listing of the files by typing: ls /usr/local/bin

You should see something like this.

```

dstarrepeater      dvrrptrepeaterd  Link to dvapnode  starnetserver
dstarrepeaterconfig glances           remotecontrol     starnetserverd
dstarrepeaterd     gmskrepeater     remotecontrol     texttransmit
dummyrepeater      gmskrepeaterd   soundcardrepeater timercontrol
dvapnode           ircddbgateway    soundcardrepeaterd timercontrold
dvapnoded          ircddbgatewayconfig splitrepeater     timeserver
dvrrptrepeater     ircddbgatewayd  splitrepeaterd   timeserverd

```

Repeater the above process for DummyRepeater if you require that package.

To run any of the applications open a terminal, and type

sudo <name of the program you want to run> Example:- sudo dstarrepeater -gui

Set all your preferences, for example using sudo dstarrepeaterconfig.

Now obviously you don't want to have to run the program from a terminal every time you want to use it.

The following instructions are for Ubuntu 14.04 LTS, and should work with any similar aged versions.

To autostart D-Star Repeater, DummyRepeater, ircDDBGateway, Timeserver and Timercontrol they have to be entered into the autostart file that will load the commands into a default applications menu for LXsession.

StarNet can also be added if you are running a server.

Using file manager go to view and select 'Show Hidden' so there is a tick next to it.

Edit the autostart file in this location /home/odroid/.config/lxsession/Lubuntu/autostart

And ensure the following is listed:-

```
sudo dstarrepeater -gui
sudo ircddbgateway -gui
sudo dummyrepeater -nolog
sudo timeserver -gui
sudo timerconrolld
sudo remotecontrold
```

After saving you can check the files by looking up the menu>Preferences>Default applications for LXsession>Autostart. All the entries from autostart file should be listed.

If you do not use 'dstarrepeater' or 'dummyrepeater' the service can be un-ticked. Re-boot and the new autostart will be enabled or disabled as previously selected.

Edit Timeserver to adjust the announcement period and module or not at all.

Timeserver can be changed in the autostart file to a daemon service so that it is not seen once setup how you want. This is done by changing the line entry to sudo timeserverd

HINT: When finished un-tick 'Show hidden' to secure config file access.

CPU FREQUENCY configuration.

For boot time operation.

First edit the following file \$ sudo nano /etc/init.d/cpufrequtils

Find the section that sets the governor speed that looks like this:

```
ENABLE="true"
GOVERNOR="conservative"
MAX_SPEED="0"
MIN_SPEED="0"
```

The GOVERNOR= can include the mode of your choice.

Either:- interactive, performance, ondemand, powersave or conservative for boot time operation.

Save using Ctrl-x and Yes followed by Enter to overwrite the file and close the editor.

Alternatively you can use sudo cpufreq-set -r -g conservative in an LXterminal at any time.

There is other program that changes CPU behaviour called 'cpufreq-selector'

Install the applet and associated gnome files using \$ sudo apt-get install gnome-applets

When completed use \$ cpufreq-selector -g ondemand to set the CPU to ondemand mode.

This does not need 'sudo' to use so if you prefer use LXterminal and

\$ cpufreq-selector -g interactive or which ever mode you choose to change as above.

You can use either 'cpufreq-set' or 'cpufreq-selector'

Check running mode by moving your mouse pointed over the CPU governor indicator on the task bar or checking the speed indicated on the dashboard using <http://localhost:82>.

This drops the CPU temperature and only uses a step up speed as required.

CPU fan by default only runs at 73 degrees and switches off at 65 degrees.

CPU Fan speed range can be adjusted with additional edit of:

\$ sudo nano /sys/bus/platform/devices/Odroid_fan.14/temp-levels.

I used values of 53 63 75 to keep the temperature lower than 60 degrees.

Search the Inter-Web for more details.

Starting of USB connected devices such as DVRPTR and DVAP were found to be more reliable at a slower system speed after initial boot-up. 200-700 MHz speed is sufficient.

DG9VH dashboard installation used also on Odroid C1 and C1+

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Introduction:

Based upon your distribution, there are different ways to install the recommended webserver. This Step-by-Step-Installation-Guide is based on a Raspberry Pi and it's raspbian (debian based) operating system.

Installing Steps:

1. Installing the webserver (lighttpd)

1.1 Open up a terminal session

1.2 `sudo apt-get update`

1.3 `sudo apt-get install lighttpd`

1.4 `sudo apt-get install php5-common php5-cgi php5`

1.5 `sudo lighty-enable-mod fastcgi-php`

1.6 `sudo /etc/init.d/lighttpd force-reload`

The following steps should be done for easier file-handling (changing file-permissions to make it easier to copy files and so on):

1.7 `sudo chown -R odroid:odroid /var/www`

1.8 `chmod og+rx /var/www`

2. Now it's time to get the dashboard-files:

2.1 `cd /var/www`

2.2 `wget https://github.com/dg9vh/DG9VH-Dashboard-for-G4KLX-Software/archive/master.zip`

2.3 `unzip master.zip`

Now several files should be unzipped into a folder called DG9VH-Dashboard-for-G4KLX-Software-master.

If you wish, you could rename the folder with following command:

2.4 `mv DG9VH-Dashboard-for-G4KLX-Software-master dashboard`

Following steps assume, that 1.12 is done.

2.5 `cd /var/www/dashboard`

3. Now we start to configure the dashboard to our own needs

3.1 `sudo nano ircddblocal.php`

Now the configuration-file is opened in an editor. First of all you have to set your distribution of the G4KLX-software.

Choose a configuration and one you could configure to your own wishes.

3.2 To choose one of the configuration-lines simply delete the // before the define-line and set the two // in front of the ones you do not want.

Choose "OTHER" and do some customization in the 'case "OTHER":'

```
// Configuration for all others, please customize
// if necessary
define("LOGPATH", "/tmp");
define("CONFIGPATH", "/etc");
define("DSTARREPEATERLOGPATH", LOGPATH. "/");
define("DSTARREPEATERLOGFILENAME", "DStarRepeater-");
define("LINKLOGPATH", LOGPATH . "/Links.log");
define("HRDLOGPATH", LOGPATH . "/Headers.log");
break;
}
```

3.3 All other values are described within the configuration-file and could be modified to your own wishes.

3.4 If you are enabling the remotecontrol-Section be sure to have remotecontrol configured well. The remotecontrol-application of the G4KLX-software has to work fully functionally for using this section. to get information on how to setup the remotecontrol-application take a look at docs/Configuring Remote Control and dashboard-remotecontrol-section.pdf

After all, your dashboard should be available on the hotspot like:

<http://z11akd.ddns.net:82>

4. Modifying webserver-configuration for easier access in webbrowser (shorter URL):

4.1 `sudo nano /etc/lighttpd/lighttpd.conf`

4.2 `server.document-root = "/var/www/dashboard"`

4.3 `index-file.names = ("dashboard.php", "index.php", "index.html", "index.lighttpd.html")`

4.4 `server-web=82`

This makes the dashboard appear on port 82 providing your router is forwarded for 82.

After this, the dashboard would be reachable under <http://localhost:82> or the IP:192.168.x.x:82

5. Modifying the dashboard itself

You could also do some modifications on the optical presentation of the Dashboard. If you have css-skills, feel free to modify the style sheets in `ircddb.css`.

You can add your personal background-image as `"background.jpg"` into the `"images"`-folder.

You can also deactivate or move the info boxes on the website by

modifying the dashboard.php-file. Here you can move or comment/uncomment the lines below the "headline()" -line.

Use as comments those you can use in standard-php-code: // or /* ... */ , where ... is the function-call.

How to get in contact with author:

You can reach me by e-mail (see above) or via D-Star (DG9VH), regularly in "DCS001 C", "DCS002 S" or "XRF262 A" xreflector-room. You could also call me directly in D-Star via CCS7-Number: (262) 5094

Comments and constructive ideas welcome!

VNC setup

X11vnc server is pre-installed in this image.

If you want to use a different password or have more control over VNC go to MENU

To enable for outside login first you start X11VNCServer from the Internet menu.

Select port number. Default is 5900 and OK.

All other settings on this page are default as None.

When the second page is displayed first enter in the 'Password' section the password of your choice for this session. 'kiwidstar' or 'XU4' for example. (without quotes)

The boxes to tick or have ticked are 'Show Instructions' and 'Shared' if you want to show another remote user how to configure the Kiwi D-Star installation.

Finally followed by ticking 'Accept Connections'

Then click Apply followed by OK.

X11VNC then starts and the tack bar icon is displayed.

VNC can be shut down using a right click menu option.

Reference:

<http://www.hardkernel.com/main/main.php>

http://odroid.in/ubuntu_14.04lts/

<http://www.dstar101.com/Linuxcompile.htm>

<https://github.com/dg9vh/DG9VH-Dashboard-for-G4KLX-Software>