Online installation using Debian Linux

The G4KLX Repeater package provides repeater software for analogue repeaters and digital voice repeaters in the amateur radio D-Star network. It is part of the openDV software from Jonathan Naylor G4KLX.

For D-Star systems the repeaters from this package work together with the ircDDBGateway. ircDDBGateway supports either software repeaters built from modules of this packag, or a typical Icom Repeater with a controller ID-RP2C and one or more Icom repeater modules.
A combination of hard- and software repeater is also supported.

G4KLX Repeater is available for Windows and Linux systems from the G4KLX website
http://db0fhn.efi.fh-nuernberg.de/~g4klx/

Beta versions are availble in the files section of the Yahoo Group “PCRepeaterController”
http://groups.yahoo.com/group/PCRepeaterController

Source code is available from the SVN BerliOS (www.berlios.de , project “opendv”)

The Windows version is provided as a self installing executable, the Linux version is available in form of source code for self compilation and installation, CentOS and Debian packages for different hardware platforms.

A comfortable way to install the Repeater software on Linux systems is to use package managers like YUM and APT for full automated online installation and updates.
You do not need any development tools, no additional libraries have to be searched and installed manually, no compilation of source code, no experience with development work, neither resources on your gateway system, nor a special development system.

This manual describes the package installation of the Repeater on a Debian system.
Debian packages of the G4KLX Repeater are available for amd64 (PC 64bit), i386 (PC 32bit) and for ARM based platforms like RaspberryPi (armhf Raspbian), DVRPTR-Net (armel/amrhf Debian) and UDR56K.

Debian Linux is available from http://www.debian.org/

A detailed Repeater admin manual is available in different languages and can be downloaded from the Files-area of the Yahoo-Group “PCRepeaterController” or the BerliOS system.

Overview / Recommended Sequence of Installation steps

If you want to run one or more **G4KLX repeater** modules together with **ircDDBGateway** on the same system, it is recommended to use a specific sequence to get all modules easily configured and work together properly.

In that case please continue with the manual from the ircDDBGateway package; it describes the installation for both packages, Repeater and ircDDBGateway.

Continue with this manual if you do NOT install any D-Star Gateway.
The next steps will be:

1. Prepare your system: add the apt sources for your required opendv packages
2. Update the catalogues of available software
3. Install the G4KLX-Repeater package
4. Configure Repeater modules by using `repeater_conf .`
5. Start the repeater modules manually.
6. Configure the autostart features of the G4KLX repeater modules
7. If everything works fine reboot your PC and check if all components come up properly.
8. Update your packages regular

Step 1: Adding the openDV repository server

At first you have to run **one** of the following commands on your repeater system once.
There are 2 different platform options and 2 different network options.
Please select carefully what you need!
If you accidently chose the wrong command, execute the other, it will overwrite the former entry.

If your repeater has full internet access and you need standard Debian packages for one of the following platforms:

- amd64 (PCs running 64bit Debian Linux)
- i386 (PCs running 32bit Debian Linux)
- armel (ARM-based devices running Debian/armel (soft fpu))
- armhf (ARM-based devices running Debian/armhf (hard fpu))

execute this command at the command prompt:

```
# sudo curl ftp://141.75.245.226:8021/debian/opendv.list -o /etc/apt/sources.list.d/opendv.list
```

If your repeater has full internet access and you need special Raspbian packages:

- armhf (ARM-based devices running Raspbian/armhf (hard fpu))

execute this command at the command prompt:

```
# sudo curl ftp://141.75.245.226:8021/raspbian/opendv.list -o /etc/apt/sources.list.d/opendv.list
```

Take care that you copy the complete line to your system and execute it!

This command copies a configuration file with information about the repository servers to your apm sources directory.
You will not need to execute this command again later for any updates.

After that download the public gpg key which is needed to verify the packages, and add it to the apt-keys:

```
# cd /tmp
# wget ftp://141.75.245.226:8021/debian/dl5di.pk
# sudo apt-key add dl5di.pk
```

Important note:

The following page is for special applications where the repeater is located in the closed amateur radio amprnet / hamnet (44/8), like we have it in Europe at some places.
There is a special repository server on that closed network for installation and updates.
This server is not available from the internet!

Skip this page if you have configured internet access before!
In case that you want to change your choice, execute the correct command, it will overwrite the former setting.

If your repeater has access to the closed amprnet / hamnet (44/8) and you need standard Debian packages for one of the following platforms:

- amd64 (PCs running 64bit Debian Linux)
- i386 (PCs running 32bit Debian Linux)
- armel (ARM-based devices running Debian/armel (soft fpu))
- armhf (ARM-based devices running Debian/armhf (hard fpu))

execute this command at the command prompt:

```
# sudo curl http://44.225.73.2/dl5di-soft/repositories/debian/opendv.list -o /etc/apt/sources.list.d/opendv.list
```

If your repeater has access to the closed amprnet / hamnet (44/8) and you need special Raspbian packages:

- armhf (ARM-based devices running Raspbian/armhf (hard fpu))

execute this command at the command prompt:

```
# sudo curl http://44.225.73.2/dl5di-soft/repositories/raspbian/opendv.list -o /etc/apt/sources.list.d/opendv.list
```

Take care that you copy the complete line to your system and execute it!

This command copies a configuration file with information about the repository servers to your apm sources directory. You will not need to execute this command again later for any updates.

If you accidently chose the wrong command run the other, it will overwrite the former entry.

After that download the public gpg key which is needed to verify the packages, and add it to the apt-keys:

```
# cd /tmp
# wget http://44.225.73.2/pub/dl5di-soft/repositories/debian/dl5di.pk
# sudo apt-key add dl5di.pk
```

Step2: Update the catalogues

```
# sudo apt-get update
```

Please note that you need to enter this command each time when you start to work with apt-get to load the latest catalogues to your system.

Step 3: Install the Repeater package

The installation command is

```
# sudo apt-get install repeater
```

Say “yes” to install the software, its’ dependencies and probably some other package updates.

Step 4: Configure the Repeater Modules

You now have 2 choices how to configure the software:

- You may use the **text-based configuration tool** which started automatically
- You may use the graphic mode of the software and set the preferences from the menu

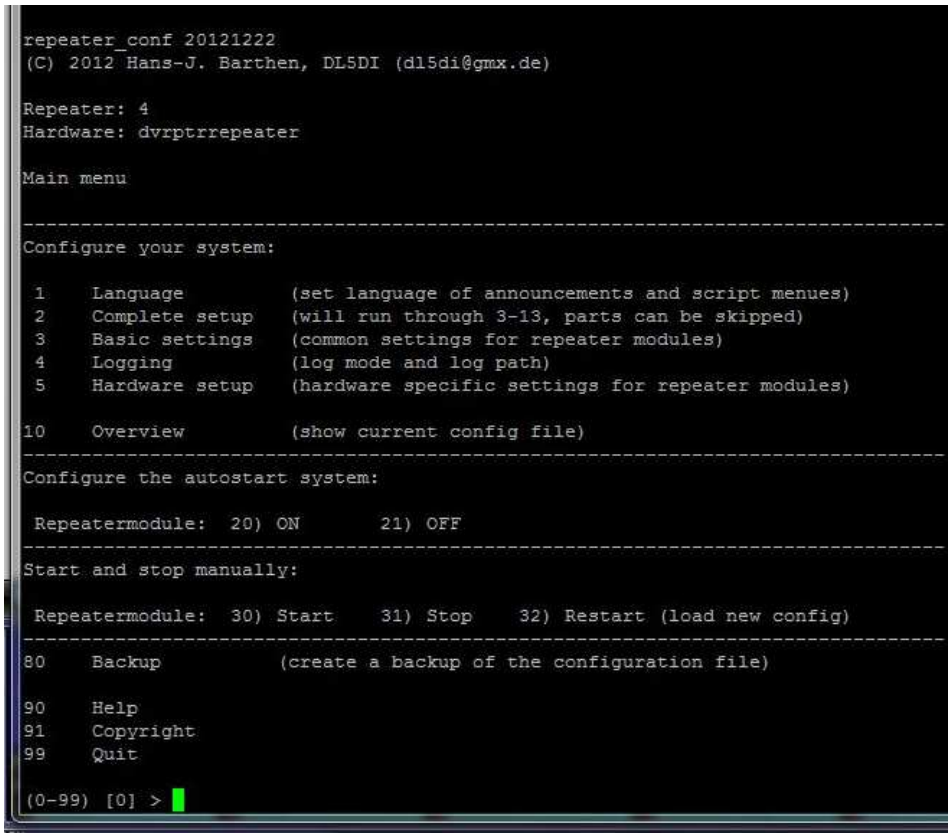
Please note that the second way will not configure add-on tools and will not set up startup files.

The text based configuration tool was designed to have all configurations in one.
It includes the setup of required repeater modules and creates and activates startup files and parameters.

4.1 Configuration in text mode:

After the first installation you will be asked to start the command line configuration tool `repeater_conf`.

If you start the configuration tool in this way, without parameters, it will aks for the number of the module and the hardware type. A list of possible options will be provided.
If the selected module was already configured before, the default value for the hardware type will be the actual setting, you can keep it by pressing “enter”.



The language can be set with selection 1 of the tool. This is the language for the voice-announcements of the repeater as well as for the language of the menus of the configuration tool. Where translations for the menus do not exist it defaults to English.

After that the initial setup can be started using selection “2”.
Settings can be corrected and changed at any time, input is stored immediately after you close the line and will be offered for default selection during next run.
Usually “-“ will restore the default value.
Be careful when changing standard settings, read the comments shown for each setting!

5.2 Configuration in GUI mode: (not recommended!)

You might configure the Repeater modules in GUI mode using an X session on the gateway PC or from remote, using openVNC or MS Remote-Console.

Open a terminal window and start the required repeater module.
If your system is not configured with English LOCALE settings I would recommend to use a start script which sets the LOCALE correct to “en_US.UTF-8”.
This makes sure that the numeric locale settings will be set correct.

The repeater package provides such startscripts, use “repeater1.sh to “repeater4.sh” to start your GUI screens.

After the configuration has been finished and the system runs properly use EXIT in the File menu to stop and leave the software.

Step 6: Start the repeater modules in daemon mode

You may start the daemon from the configuration tool repeater_conf, menu option 30, or with the commands:

```
# sudo /etc/init.d/repeater_1 start
```

Step 7: Configure the autostart features of the G4KLX repeater modules

Use `repeater_conf` for each repeater module to start it manually (option 30) and activate autostart (option 20).
Example for module 1:

```
# sudo repeater_conf 1
```

Using the start-/stopscript will automatically activate and deactivate a watchdog controlled by cron, which makes sure, that the software is restarted if it should break for whatever reason.
Please find more information in the manual for the Debian Repeater packages.

Step 8: Test startup capability

I everything works fine reboot your PC and check if all components come up properly.

Step 9: Update the Repeater package

Later updates will be installed as usual by

```
# sudo apt-get update
# sudo apt-get upgrade repeater
```

or during a normal apt-get system updates.

The update process will automatically stop the repeater modules, install the update and restart it if the start-scripts are configured for autostart.
On ARM based systems - which usually have no hardware clock - the script will also start ntpdate to set the actual date and time. It has to stop and restart ntpd for that.

It would be wise to check the configuration for possible changes and new options after each update. You can use the text based configuration tool or start the repeater modules in GUI mode again. Don't forget to stop the daemon before you start the GUI version!

In case of an issue you may easily step back to the version which was installed before:

```
# sudo apt-get downgrade repeater
```

Please find more information on the apt-get features in the manpage or on the internet.

73

Hans, DL5DI

APPENDIX 1:

Path-structure of your Debian installation

The Debian installation uses a different path structure than the YUM/CentOS installation or the installation from source.
One basic reason is, that the installation runs as non-root and non-root accounts are not allowed to write to config files in the /etc tree.

`/etc/apt/sources.lists.d/opendv.list`	Repository server list
`/etc/default/dcsgateway / dextragateway`	start options of reflector gateways
`/etc/default/dvapnode`	start options of dvapnode
`/etc/default/*repeater` (* = gmsk, dvrptr, split …)	start options of repeater modules
`/etc/default/repeater_conf`	options of configuration program
`/etc/init.d/repeater_1 … repeater_4`	startup files for repeater modules
`/etc/init.d/dcsgateway /dextragateway`	startup file for reflector gateways
`/home/opendv/repeater_conf/data/`	menu and help files of config program
`/home/opendv/repeater/repeater_conf`	default values for configuration
`/home/opendv/repeater/*repeater_1 … *repeater_4`	configuration of repeater modules
`/usr/bin/dvapnode`	dvapnode executable
`/usr/bin/*repeater` (* = gmsk, dvrptr, split …)	repeater executables
`/usr/bin/repeater_conf`	repeater configuration program
`/usr/bin/dcsgateway /dextragateway`	reflector gateway executables

and some more

APPENDIX 2:

Start-Process / places where to place options manually :
(example for module “1”)

During startup the init-process starts “/etc/init.d/repeater_1” with the option “start”.

This startscript is part of the distribution and should not be changed manually!

It loads parameters from the file /etc/default/repeater_1 which may be adjusted to meet the local needs.

The content of this file looks like this:

```
# Defaults for repeater initscript
# sourced by /etc/init.d/ircddbgateway
# installed at /etc/default/ircddbgateway by the maintainer scripts

#
# This is a POSIX shell fragment
#
DAEMON=/usr/bin/dvrptrrepeaterd
# Additional options that are passed to the Daemon.
DAEMON_ARGS="-daemon"
DAEMON_USER=opendv
#
```

- DAEMON specifies which executable program should be started. Note that the name of the program at this place is depending on the hardware.
  This setting is changed by the configuration program ‘repeater_conf’
- DAEMON_ARGS may also include the parameters “-nolog” and “-logdir”.
  The values can be modified by the configuration program ‘repeater_conf’.
  Please find more details about possible command line parameters in the general Repeater manual:
  http://groups.yahoo.com/group/PCRepeaterController/files/Documentation/
- DAEMON_USER specifies the user account which will be used to run the executable.
  Do not change the entry unless you exactly know what you do.
  Wrong permissions may break the functionality of the software.