G4KLX Repeater

Online installation using YUM

This document describes how to install the G4KLX software repeater package easily by using the Yum package installer of CentOS.

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

Beta versions are only available in the files section of the Yahoo Group "PCRepeaterController"
http://groups.yahoo.com/group/pcrepeatercontroller

The Windows version is provided as a self installing executable, the Linux version is available in form of a zip file with the source code tree for self compilation and installation.

A comfortable way to install the repeater software package on Linux systems is to use the package manager YUM for full automatic online installation.
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 repeater system, nor a special development system.

The "repeater" YUM package is available for CentOS5.
Why YUM? Why CentOS5?

- CentOS is one of the 3 leading Linux distributions worldwide
- CentOS5 is the standard Linux distribution for DStar gateways, running on more than 70% of all gateways worldwide.

CentOS5 is available for free download and on CDs/DVDs.
Please check http://www.centos.org to find more details and mirrors for downloads.

Note that we composed and tested the package with CentOS**5**, but chances are good that the installation also works with CentOS6 .
Please find information on additional requirements for CentOS6 below.

Recommended Sequence of Installation Steps:

Most Repeaters are connected to Internet-Gateways.

If you want to run one or more **G4KLX repeater** modules <u>connected to</u> **ircDDBGateway** we recommend the following sequence of steps to get all modules easily configured and work together:

1. Install the G4KLX-Repeater package – but do not configure it!
2. Install the ircDDBGateway package
3. Configure ircDDBGateway by using `ircddbgw_conf`
   (including autostart features)
   `ircddbgw_conf` automatically involves parts of `repeater_conf` if it is found to be installed
4. Start ircDDBGateway (manually or from ircddbgw_conf)
5. Configure the autostart features of the G4KLX repeater modules using `repeater_conf` for each repeater module.
6. If everything works fine reboot your PC and check if all components come up properly.

Step 1: Adding the ircDDB repository server

At first you have to run the following command on your repeater system once:

```
curl http://group1-update.ircddb.net/ircDDB/centos55/ircddb.repo -o /etc/yum.repos.d/ircddb.repo
```

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

This command copies a configuration file with information about the ircDDB update servers to your yum repos directory.
You will not need to execute this command again later for any update.

(You might skip this step if you use the ircDDBGateway Yum updates, in that case you have already added the ircDDB repository.)

For CentOS6 only:
John K7VE reported that he was able to get the installation of **ircDDBGateway** also run on CentOS**6.2** after adding another rpm source using the following command. It may be worth to try if this also works for the repeater package:

```
rpm -Uvh http://download.fedoraproject.org/pub/epel/6/i386/epel-release-6-5.noarch.rpm
```

Please give us some feedback!

Step2: Clean your expire-cache

```
yum clean expire-cache
```


Step3: Add Repo server
(This step might not be necessary on all systems. In case that you get an error message saying that the package is already installed continue with step 4)

```
yum install rpmforge-release
```

After this command was executed successful you need to clear the cache again to make sure that the new repo is used.

```
yum clean expire-cache
```

Step 4: Install the repeater package

There are 2 different versions of the repeater package available.
The difference is the cycle that it is updated:

- **"repeater"** is updated regular with all beta versions which are provided in the beta folder of the PCRepeaterControl Yahoo Group. With this you will participate at the beta test.
- **"repeater-release"** is only updated with official stable releases which are provided in the folder "Release" of the Yahoo Group.

Please note: packages cannot be mixed or installed parallel!
YUM does not allow updating files from one package by another package.
If you want to change from one version to the other make sure, that the old is uninstalled before the new is installed! The config files in /etc will stay untouched, they are not part of the packages.
All package versions of the repeater and the G4KLX ircDDBGateway share the package "g4klx_sharedfiles". This package supplies host-lists for reflector networks and other data.
This package is installed automatically and may be updated separate at any time when list updates may be necessary.

Depending on the selected package the installation command is

```
yum install repeater
```

- OR -

```
yum install repeater-release
```

Say "yes" to install the software.
Dependencies should be resolved, all necessary libraries be downloaded and installed.

Step 5: Configure repeater modules

If you want to run your repeater modules together with ircDDBGateway on the internet you should stop here and install the ircDDBGateway package next before you start any configuration steps!
Please check the documentation from the files areas of the Yahoo Group "ircDDBGateway" for more details.

The ircDDBGateway configuration tool will configure most parts of the repeater modules automatically during the gateway setup if the repeater software will be found.
This will make sure that all settings will fit together.

Please note that the ircDDBGateway configuration tool will read the repeater configuration but not vice versa!

After the ircDDBGateway has been configured - or if you want to run a repeater standalone without gateway – or if repeater and gateway are not installed on the same PC, you may configure the repeater modules either in text mode or in graphic mode.

Configuration in GUI mode:

You might configure the different hardware depending repeater modules in GUI mode using an X session on the gateway PC or from remote. An easy way from remote is using VNC.

(You can install a VNC server with "yum install vnc-server". After that you can access the gateway system in GUI mode from remote using a free VNC client like UltraVNC for your favorite OS).

Open a terminal window and start the necessary module.

⇒**Configure the repeater software like described in the configuration manual.**
You may find the documentation in the folder "Documentation" of the FILES section at the Yahoo Group "PCRepeaterController".
http://groups.yahoo.com/group/pcrepeatercontroller/files/Documentation/

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

Configuration in text mode:

The text based configuration tool is called `repeater_conf`
On a standalone repeater without any gateway you may start "`repeater_conf`" direct, otherwise – like mentioned before – you should let `ircddbgw_conf` involve it when needed and coordinate the settings.

The program takes 0 to 2 parameters.

    repeater_conf <module> <hardwaretype>

with

<module>   1-4   this value has to meet the module index of ircDDBGateway!
<hardwaretype>   1-4

1. dstarrepeater (soundmodem)
2. dvrptrrepeater
3. gmskrepeater
4. dvapnode

These command line parameters allow to start the program from other software like it is done from `ircddbgw_conf`.
When called without command line parameters the program will request the necessary values.
As soon as a repeater module has been configured once the second parameter will no longer be necessary and should be left away.

The known module letter A-D may be configured fully independent from this <module> parameter (for example: module 1 = C, module 2 = A)

```
[screen 0: bash] root@dstar:/mirrors/ircddb/testscript/usr/local/bin

[root@dstar bin]# repeater_conf 2

repeater_conf 20120711-beta
(C)Hans-J. Barthen, dl5di 2012

logging to /var/log/dstar/repeater_conf-201207112154.log
Defaultvalues: /etc/default/repeater_conf
Select Repeaterconfig: /etc/dstarrepeater_2
-------------------------------------------------------------------

  Configuration script for Repeater Modules from Jonathan Naylor, G4KLX
  Copyright (C) 2012   Hans-J. Barthen, DL5DI (dl5di@gmx.de)


-------------------------------------------------------------------


repeater_conf 20120711-beta
(C) 2012 Hans-J. Barthen, DL5DI (dl5di@gmx.de)

Repeater: 2
Hardware: dstarrepeater

Main menu


-------------------------------------------------------------------
Configure your system:

  1     Language       (set language of announcements and script menues)
  2     Complete setup (will run through 3-13, parts can be skipped)
  3     Basic settings (common settings for repeater modules)
  4     Hardware setup (hardware specific settings for repeater modules)

10     Overview        (show current config file)
-------------------------------------------------------------------
Configure the autostart system:

 Repeatermodule:  20) ON       21) OFF
-------------------------------------------------------------------
Start and stop manually:

 Repeatermodule:  30) Start    31) Stop   32) Restart (load new config)
-------------------------------------------------------------------
80     Backup         (create a backup of the configuration file)

90     Help
91     Copyright
99     Quit

(0-99) [0] >
```

PLEASE READ THE MENUS CAREFUL !

- You may break the script with Ctrl-C at any time.
- All inputs are written immediate after pressing enter.
- The prompt at the cursor will show the value found from an older setting, you may accept that by pressing <ENTER>.
- You may also press '-' to reset the value to the default.

Most complicated for newbies are the settings of ports and addresses. If you run a standard system you may leave the defaults.

Setting up a sound modem-based dstarrepeater with repeater_conf requires the alsa-utils Yum package to be installed.

Please note that the sound modem part is not really tested!

The soundmodem configuration is different from other modem setups, it specifies all devices by full text names, not by clearly defined standard device names.

Example: "[HDA Intel ALC662 rev1 Analog (hw:0,1)]"

The ALSA tools can read that names and offer it for selection.

If you use other types of modem devices or can use the "default" modem because you only have one installed or can once find out or set the value by the repeater in GUI-mode you won't need to install ALSA.

Paths and Files:

- /etc/dstarrepeater_*   config file for dstarrepeater module *   (1-4)
- /etc/dvrptrrepeater_*   config file for dvrptrrepeater module * (1-4)
- /etc/gmskrepeater_*   config file for gmskrepeater module *   (1-4)
- /etc/dvapnode_*   config file for dvapnode module *   (1-4)

- /etc/default/repeater_conf   default values for all settings

This file provides the default values which will be offered in the menu if no better information can be found in existing config files and the user enters nothing. Do not change this file, it will be generated from Jonathan's code and it will be overwritten during Yum updates.

- /etc/init.d/repeater_*   startscripts for repeater module *   (1-4)

The configuration tool repeater_conf will create hard links for each module which should be started automatically from a master file /etc/init.d/repeater which is under the control of YUM.

- /usr/share/repeater_conf/*.hlp helpfiles in different languages
- /usr/share/repeater_conf/*.mnu menufiles in different languages

The names of the default language file are ircddbgw_conf.0.hlp and ircddbgw_conf.0.menu
(0 = english/UK)

The script reads the configured language used for the gateway and uses the same for the menus.
If no translated file exists it always takes 0.
At the moment 0/english and 1/german are available.

These files may be overwritten by the Yum package, so do not change it!
Let me know if you find typos or would recommend changes.

Logging / debugging:

- /var/log/repeater_conf.log will log a lot of information for debugging.

You may change that path in /etc/sysconfig/repeater_conv
Change it to /dev/null to stop logging, but in that case don't ask for support! :-)

/etc/sysconfig/repeater_*   binarypath and commandline options forrepeater module * (1-4)

This is the only file that you may edit, but usually for a standard installation you won't have to do it.
Here you can for example change to log path.

repeater_conf will create the basic config file for the repeater module and also the startup script and options file in /etc/sysconfig.
Special menu options allow to activate the startup script or start the repeater manualy.

The program will do a lot of data verification. Let me know if your values will not be accepted for unknown reasons.

Step 6: Update Repeater Software

Later updates will be installed as usual by

```
yum update repeater
```

    - OR - *(depending on what version was installed)*

```
yum update repeater-release
```

or during a normal YUM system update.
The update process will automatically stop the repeater, install the updates and restart the repeater modules.
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 repeater modules in GUI mode again. Don't forget to stop the daemon before!

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

```
yum downgrade repeater
```

    - **OR** - *(depending on what version was installed)*

```
yum downgrade repeater-released
```

Please find more information on the Yum features in the manpage or on the internet.

Automatic startup of G4KLX Repeater on CentOS Linux

The main goal was to keep the setup as unique as possible for all different environments, even though that the repeater software modules are hardware depending.

It should be possible to create the complete setup automatically from a configuration tool

- 1-4 modules
- mixed repeater hardware of the same or different types
- Icom and homebrew hardware mixed
- different repeater callsigns which may result in non-unique module letters

Overview:

The startup uses the usual features and standards of CentOS Linux.

All repeater modules are started with one single startup script: `/etc/init.d/repeater`

This universal repeater startup script uses configuration files based on the effective name which is used to start itself.

Example: if you create links to this script, it will automatically use configuration files with the name of the link (the same with PID files etc.)

This offers advantages for automatic maintenance by configuration tools and setup by rpm packages.

Sample setup in a more complex environment

Let us assume that we want to run a gateway with 4 repeater modules, 3 different types of hardware, 2 modules running the same type of hardware and an IcomG2 Controller is also involved.

- repeater1: dvrptrrepeater
- repeater2: Icom RP2C controlled DD module
- repeater3: dvrptrrepeater
- repeater4: gmskrepeater

The installation script /usr/local/bin/repeater_conf will create a link to the universal startup script for each homebrew module that will be used.
The name of the link is "repeater" followed by a number which is taken from the ircDDBGateway setup.

"repeater1" in the ircDDBGateway configuration gets the startup script "repeater_1" ... "repeater_4" gets "repeater_4".

Modules which use Icom RP2C are not relevant; the controller uses a power switch instead. :-)

The numbers are unique, but don't need to be used all, nor be in sequence.

- `ln /etc/init.d/repeater /etc/init.d/repeater_1`
- `ln /etc/init.d/repeater /etc/init.d/repeater_3`
- `ln /etc/init.d/repeater /etc/init.d/repeater_4`

You may see that there is no link for repeater_2, which is the Icom RP2C controlled module.
The setup tool will then create a config file for each module with the same filename and numbering:

- `/etc/sysconfig/repeater_1`
- `/etc/sysconfig/repeater_3`
- `/etc/sysconfig/repeater_4`

Each of this file has 2 lines

- name with complete path of the executable, this is hardware depending

- the command line options which should be used

Here the content of the 3 files for this sample:

File /etc/sysconfig/repeater_1:

```
REPEATER_PATH=/usr/local/bin/dvrptrrepeaterd
REPEATER_OPTIONS="-daemon -logdir /var/log 1"
```

File /etc/sysconfig/repeater_3:

```
REPEATER_PATH=/usr/local/bin/dvrptrrepeaterd
REPEATER_OPTIONS="-daemon -logdir /var/log 3"
```

File /etc/sysconfig/repeater_4:

```
REPEATER_PATH=/usr/local/bin/gmskrepeaterd
REPEATER_OPTIONS="-daemon -logdir /var/log 4"
```

Note the number 1-4 at the end of each command line!
The repeater software module will use that number to load the correct configuration files and to create different log-files.

The "repeater_conf" setup tool will create configuration files for each module which hold the individual settings of each module:

- `/etc/dvrptrrepeater_1`
- `/etc/dvrptrrepeater_3`
- `/etc/gmskrepeater_4`

This system now needs to be enabled for automatic startup

- `chkconfig --add repeater_1`
- `chkconfig --add repeater_3`
- `chkconfig --add repeater_4`

The way that it works:

To manually start module 1 use this command:

```
service repeater_1 start
```

- the command will run the startup script /etc/init.d/repeater_1
- the script will read the sysconfigfile /etc/sysconfig/repeater_1
- in this script it will find the binary name which needs to be started and the command line options.
  The resulting command which will be executed is:
    /usr/local/bin/dvrptrrepeater -daemon -logdir /var/log 1
- The configuration id "1" at the end will let it load
    /etc/dvrptrrepeater_1
  and write the logfile
    /var/log/DVRPTRRepeater_1.log

If you want to configure the modules by using the GUI-mode you need to take care that you use the same configuration ID in the command line parameters to work with the correct configuration file:

Sample: we want to change the configuration of repeater 3:

```
service repeater_3 stop
/usr/local/bin/dvrptrrepeater 3
```

(optional parameters -logdir and -configdir only to be used if not default)

73

Hans, DL5DI