

How to install Dream 1.0.6 under SUSE 9.1 Professional Edition (Linux)

Dream is open-source software developed by Volker Fischer and Alexander Kurpiers at Darmstadt's Technical University.

A DRM (Digital Radio Mondiale) signal with an IF (intermediate frequency) of 12kHz is fed into the line-in of your PC sound card and Dream converts it into audio that you can hear with speakers or headphones, or save as a .wav file.

To receive DRM transmissions with this software you need a receiver - either purpose-built or modified - that has a 12kHz IF output.

While writing these instructions I installed Dream-1.0.6 on an Intel Celeron 2.53 GHz PC, with 256 MB RAM. The operating system was Linux SUSE 9.1.

Before starting to read this, please make sure you have a copy to hand of the brief installation instructions on Dream under Linux issued by TU Darmstadt. You can find them at <http://drm.sourceforge.net>. (see Source Code, click installation instructions) This article is intended to complement those instructions, not to replace them.

You will see that you will need the Trolltech Qt 3 libraries. They are available in KDevelop in the Professional Edition of SUSE 9.1 KDevelop is an Integrated Development Environment, or IDE, used by programmers.

Let's assume you have completed the basic installation of SUSE 9.1. You will then need to install KDevelop separately. Make sure you have root password handy.

This is how you install KDevelop from the SUSE start page.

Click green SUSE logo button (bottom left-hand corner)

Click Control Center

Click Software

Click Install and Remove software

Click Administrator mode

Enter your root password

Click OK

Insert SUSE disc(s) as requested

You will now have installed - among other things - qt-3, qt3-devel, qt-devel-doc, qt3-devel-tools

Next download the following from the Dream website <http://drm.sourceforge.net> (see Source Code, click download)

drm-1.0.6.tar.gz

faad2-2.0-3.src.rpm

fftw-2.1.3-8.src.rpm

qwt.0.4.1.2.src.rpm

and save them on a disc.

Installing fftw-2.1.3-8:

(Please note: entries typed into the command line and followed by carriage return (enter) are written in bold type)

When I open the shell console on the SUSE start page, I see

caldwell@linux~>

You will probably see something like this

your_name@linux~>

Next log yourself in as superuser using command **su**

su

then enter your password

you should then be in directory

linux:/home/your_name #

Now add a subdirectory to this called **drm**

linux:/home/your_name # **mkdir drm**

check to see if your new directory is there

linux:/home/your_name # **cd drm**

This should give you

linux:/home/your_name/drm #

Now go to the top of the tree

cd /

which will give you

linux:/#

Now insert your disc with the downloaded files into your drive and take a look at it

cd media/cdrecorder (on my system)

ls

Now copy **fftw** across to your new **drm** subdirectory

cp fftw-2.1.3-8.src.rpm /home/your_name/drm

Now make sure that it has arrived

cd /

cd home/your_name/drm

ls

(Files that end in **.rpm** are known as **RPMs**. Red Hat Package Managers automate the installation of software. Despite the name, they are found in a variety of Linux distributions, not just Red Hat.)

Next you install the **rpm**

rpm -ivh fftw-1.2.3-8.src.rpm

The command you have just executed will put **fftw-2.1.3.tar.gz** into

linux:/usr/src/packages/SOURCES

(this is what it does under **SUSE 9.1** - if you are using a different Linux distribution, it could end up somewhere else instead)

Go to that directory.

cd /

followed by

cd /usr/src/packages/SOURCES (or your own path)

Have a look at that directory

linux:/usr/src/packages/SOURCES # **ls**

You should see

fftw-2.1.3.tar.gz

Next, unpack the files with the following command

tar xvzf fftw-2.1.3.tar.gz

It will create a directory called **fftw-2.1.3** with files inside it.

Go to that directory.

cd fftw-2.1.3

Now execute the following command

./configure

This will take time. Then execute the following

make

This will also take time. Then execute

make install

Next we install qwt (please see remarks by Hubert Czaja at the end of this document before attempting this)

Return to the top of the tree

```
cd /
```

and go to you disc with the downloaded files

cd media/cdrecorder

Copy qwt-0.4.1-2.src.rpm to home/your_name/drm

```
cp qwt-0.4.1-2.src.rpm /home/your_name/drm
```

check to see if it is there

```
cd /
```

```
cd home/your_name/drm
```

```
ls
```

Next you rebuild the rpm by executing the following command

rpm build --rebuild qwt-0.4.1-2.src.rpm

This command will place qwt-0.4.1-2.i586.rpm and qwt-devel-0.4.1-2.i586.rpm in linux/usr/src/packages/RPMS/i586

(again, this may be slightly different on your system)

Install one of those rpms

```
rpm -ivh qwt-0.4.1-2.i586.rpm
```

and then the remaining one

```
rpm -ivh qwt-devel-0.4.1-2.i586.rpm
```

This will take a bit of time. It will have created a directory called /usr/include/qwt and placed a number of "includes" in it ("includes" are header files ending in .h)

It will also have put the following library files into /usr/lib

```
libqwt.so
```

```
libqwt.so.0
```

```
libqwt.so.0.4.1
```

We now need to move the "includes" to /usr/local/include and the libraries to /usr/local/lib

This is how it is done

```
cd /
```

```
cd usr/include/qwt
```

```
mv *.h /usr/local/include
```

Check to see they are there

```
cd/
```

```
cd /usr/local/include
```

```
ls
```

Now to the libraries

```
cd /
```

```
cd /usr/lib
```

```
mv libqwt* /usr/local/lib
```

Again, check to see they have arrived

```
cd /
```

```
cd /usr/local/lib
```

```
ls
```

Next we need to install and compile faad2:

Return to the top of the tree

```
cd /
```

and go to you disc with the downloaded files

cd media/cdrecorder

Copy faad2-2.0-3.src.rpm to /home/your_name/drm

cp faad2-2.0-3.src.rpm /home/your_name/drm

check to see that it has arrived

cd /

cd /home/your_name/drm

ls

Install the rpm

rpm -ivh faad2-2.0-3.src.rpm

This will put faad2-2.0-drmfix.patch and faad2-2.0.tar.gz in /usr/src/packages/SOURCES.

First unpack faad2-2.0.tar.gz

linux:/usr/src/packages/SOURCES # **tar xvzf faad2-2.0.tar.gz**

This will create a directory faad2-2.0 with files in it. Switch to this directory

linux:/usr/src/packages/SOURCES # **cd faad2-2.0**

Next we compile faad

./configure --with-drm

make

make install

Next we install the patch. First return to /SOURCES.

linux:/usr/src/packages/SOURCES/faad2-2.0 # **cd ..**

Copy patch to /faad2-2.0

cp faad2-2.0-drmfix.patch /usr/src/packages/SOURCES/faad2-2.0

Check to see that it is there

cd faad2-2.0

ls

Now we apply the patch

patch -p1 < faad2-2.0-drmfix.patch

You will see a message that reads "patching file libfaad/common.h"

Now compile again

./configure --with-drm

make

make install

Next we install drm.

Go to the top of the tree

cd /

and go to your disc with the downloaded files

cd media/cdrecorder

Copy drm-1.0.6.tar.gz home/your_name/drm

cp drm-1.0.6.tar.gz home/your_name/drm

Check to see it is there

cd home/your_name/drm

ls

Unpack it using tar

tar xvzf drm-1.0.6.tar.gz

This will create a directory drm-1.0.6 with files in it. Switch to it.

cd drm-1.0.6

Now configure while enabling the alsa sound system

./configure --enable-alsa

Now compile

make

make install

Now you need to make sure that your computer can "see" the files you have installed in /usr/local/include and /usr/local/lib

To do this you will need to create a .bashrc shell

Go to from drm-1.0.6 directory to drm directory

cd ..

open the vim text editor

vim .bashrc

press the letter i to enter the text editor's insert mode.

Scroll down below all the commands that have been commented out with #

and enter the following on an empty line starting at the very beginning.

PATH=/usr/local/bin:/usr/bin:/usr/X11RG/bin:/bin:/usr/local/lib:/usr/local/include

Type this in without entering any whitespace or line-breaks

Now press the Esc key to exit the text editor's command mode and then execute the following command to save and quit

:wq

(PATH tells the shell where to find the programmes. Take care with PATH - mistakes can cause your system to malfunction, for example, you might not be able to log in properly and might have to reinstall the operating system.)

Log out of your computer and close it down. Then switch on and log back in again.

Stay in the user mode and switch the drm-1.0.6 directory

cd drm

cd drm-1.0.6

now enter the command **drm**

drm

and Dream should start up.

Testing Dream:

You do not need a receiver to test Dream; it can be done with a second computer. Visit <http://drm.sourceforge.net> and you will find a collection of drm test files saved in the .wav format. These are not audio files, but you can play them on a standard audio player. Save one or more of these to disc and play them on your second computer. The line-out of your second computer is connected to the line-in of the computer with Dream. Make sure the player is on a continuous loop. The signal will die down and rise up again about every 30" when the file comes to an end, but you will be able to see that Dream has been properly installed and is fully operational.

I am indebted to Hubert Czaja from Deutsche Welle's Engineering Department who has very kindly checked these instructions and tried them out himself using SUSE 9.2.

He says that under SUSE 9.2 **rpm build** is written **rpmbuild** and the package name is slightly different so the command

rpm build --rebuild qwt-0.4.1-2.src.rpm

becomes

rpmbuild --rebuild qwt-4.2.0-1.src.rpm

To install the rpms you would then go

rpm -ivh qwt-4.2.0.1.i586.rpm

followed by

rpm -ivh qwt-devel-4.2.0.1.i586.rpm

This will create a directory called /lib/qt3/include/qwt and fill it with "includes". It will also put the following library files into /usr/lib/qt3/lib

libqwt.so

libqwt.so.4.2

libqwt.so.4.2.0

It will also the module libqwtplugin.so into /usr/lib/qt3/plugins/designer

The commands moving the "includes" and the libraries to the local directories /usr/local/include and usr/local/lib will have to be amended accordingly

```
cd /  
cd /usr/lib/qt3/include/qwt  
mv *.h /usr/local/include  
Check to see if they are there  
cd /  
cd /usr/local/include  
ls  
Now to the libraries  
cd /  
cd /usr/lib/qt3/lib  
and  
cd /  
cd /usr/lib/qt3/plugins/designer  
mv libqwt* /usr/local/lib  
and check to see that they have arrived  
cd /  
cd /usr/local/lib  
ls
```