

# Installing LOFAR Software on a CentOS 6.5 (Final) system (cluster Newton of the AIP Potsdam)

— *Frank Breitling* 2015/06/26 18:47

I was mainly following the previous installation notes provided by others:

[http://www.lofar.org/operations/doku.php?id=public:user\\_software:lofar](http://www.lofar.org/operations/doku.php?id=public:user_software:lofar)

[http://www.lofar.org/operations/doku.php?id=engineering:user\\_software:ubuntu\\_12\\_4](http://www.lofar.org/operations/doku.php?id=engineering:user_software:ubuntu_12_4)

However a few problems occurred and had to be solved as described below.

Ideas and support by **Arno Schoenmakers**, **Ger van Diepen** and **Marcel Loose** were very helpful and highly appreciated.

This instruction will install all packages in \$HOME/local/.

## 1. Setup of the environment

The 4 Newton head nodes provide some necessary libraries via [Environment Modules](http://modules.sourceforge.net/) (see also <http://modules.sourceforge.net/>).

We need its HDF5 libs and its more recent CMake version 3, since the systems version 2.6 is too old. Moreover, for the installation of Pyrap we need a Python path with write access.

So I added the following two lines to my \$HOME/.bashrc:

```
module load cmake hdf5
export PYTHONPATH=$HOME/local/lib64/python2.6/site-packages:$PYTHONPATH
export PATH=$HOME/local:$PATH
```

### 1.1 Optional CMake installation - only necessary if using newl1

Unfortunately CMake is broken on newl1. To build the LOFAR software on this head node, we need to build our own CMake as follows:

```
mkdir -p $HOME/local/src
cd $HOME/local/src
wget http://www.cmake.org/files/v3.2/cmake-3.2.3.tar.gz
tar xf cmake-3.2.3.tar.gz
cd cmake-3.2.3
./bootstrap --prefix $HOME/local
make -j12
make install
```

If working on the other head nodes newl2 to newl4 this step is not necessary.

## 2. Installation of required packages

Next we need to build and install these other packages as follows:

```
cd $HOME/local/src/
wget ftp://ftp.atnf.csiro.au/pub/software/wcslib/wcslib.tar.bz2
tar xf packages/wcslib.tar.bz2
cd wcslib-5.6/
./configure --prefix=$HOME/local/
make install

cd $HOME/local/src/
wget http://www.fftw.org/fftw-3.3.4.tar.gz
cd fftw-3.3.4
configure --prefix=$HOME/local --enable-threads --enable-shared --enable-float
make -j12 install
```

## 3. Installation the LOFAR software

Now we can continue building the LOFAR software.

### 3.1 Essential CMake switches

We will need these essential CMake switches:

1. -DBoost\_NO\_BOOST\_CMAKE=ON
2. -DUSE\_LOG4CPLUS=NO
3. -DUSE\_BACKTRACE=OFF
4. -DCMAKE\_INSTALL\_PREFIX:PATH=\$HOME/local

1.) Is necessary when using some older versions of boost with cmake-2.8.6-rc2 or later, where the boost finding has changed.

(See

<https://stackoverflow.com/questions/9948375/cmake-find-package-succeeds-but-returns-wrong-path>.)

Otherwise make will show this error later:

```
make[2]: *** No rule to make target
`/usr/lib64/lib64/libboost_program_options-mt.so.5', needed by `segment'.
Stop.
make[1]: *** [CMakeFiles/segment.dir/all] Error 2
make: *** [all] Error 2
```

2.) Is necessary if the Log4cplus libs are not installed.

3.) Is necessary if building shared libraries (the default with LOFAR), but libiberty.so is not installed on your system, only libiberty.a.

(See [https://support.astron.nl/lofar\\_issuetracker/issues/8046](https://support.astron.nl/lofar_issuetracker/issues/8046)).

4.) Sets the install path to \$HOME/local/.

## 3.2 Casacore

So we can build the rest of the packages as follows:

```
cd ~local/src/
git clone https://github.com/casacore/casacore
mkdir build/casacore
cd build/casacore
time cmake -DBUILD_PYTHON=yes -DBUILD_TESTING=NO -
DCMAKE_INSTALL_PREFIX=~/.local -DUSE_FFTW3=yes -DUSE_THREADS=YES \
  -DUSE_OPENMP=yes -DDATA_DIR=~/.local/data -DUSE_HDF5=yes -
DCMAKE_PREFIX_PATH="$HOME/local;" ../../casacore
time make -j12
make install
```

## 3.3 Pyrap

```
make install pip install python-casacore --global-option=build_ext --global-
option=-I/usr/include/cfitsio:$HOME/local/include \
  --global-option=-L$HOME/local/lib --install-option=--prefix=$HOME/local
```

### 3.3.1 Alternative Pyrap installation

Or alternatively if we don't want to install Pyrap with //pip// we can do:

```
<file>
cd ~local/src/ git clone https://github.com/casacore/python-casacore.git
cd python-casacore
python setup.py build_ext -I/usr/include/cfitsio:$HOME/local/include -
L$HOME/local/lib
python setup.py install --prefix=$HOME/local
```

## 3.4 Casarest

Now we continue with the rest:

```
cd ~local/src/
svn co https://svn.astron.nl/casarest/trunk/casarest
mkdir build/casarest
cd build/casarest
```

```
cmake -DCASACORE_ROOT_DIR=$HOME/local -DBUILD_ALL=1 -  
DCMAKE_INSTALL_PREFIX:PATH=$HOME/local \  
-DCMAKE_PREFIX_PATH=/usr/include/cfitsio -DBoost_NO_BOOST_CMAKE=ON  
../../casarest  
time make -j12  
make install
```

### 3.4 DP3 and Calibration

```
cd ~local/src/  
svn checkout --ignore-externals https://svn.astron.nl/LOFAR/trunk LOFAR  
mkdir -p build/gnu_opt  
cd build/gnu_opt  
cmake -DCASACORE_ROOT_DIR=$HOME/local -DBUILD_SHARED_LIBS=ON -DUSE_OPENMP=ON  
-DBUILD_PACKAGES="DP3 Calibration" \  
-DCMAKE_INSTALL_PREFIX:PATH=$HOME/local -DUSE_LOG4CPLUS=NO -  
DUSE_BACKTRACE=OFF -DBoost_NO_BOOST_CMAKE=ON ../../LOFAR  
time make -j12  
make install
```

Done!

Now the commands NDPPP and calibrate-stand-alone should be available on this system.

Enjoy!

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