

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=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](#) (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).

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 -DCMAKE_INSTALL_PREFIX=~/.local -DUSE_FFTW3=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

```
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:

```
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 -DUSE_OPENMP=yes -  
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=$HOME/local -DBUILD_PACKAGES="DP3 Calibration" -  
DCMAKE_INSTALL_PREFIX:PATH=$HOME/local \  
-DUSE_OPENMP=yes -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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<https://www.astron.nl/lofarwiki/> - **LOFAR Wiki**

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