

Modernizing Distribution of SDR Tools and Libraries with Conan

Brennan Ashton



What does CMake have to do with SNR?

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The story of starting to experiment with Software Defined Radios



You say I can view images of the earth!!

Receive GOES-16 and GOES-17 Images with a Raspberry Pi and RTL-SDR dongle

Also see the [original Pieter Noordhuis's guide](#)

Hardware

You need:

1. [Raspberry Pi Model B \(or B+\)](#) with a MicroSD Card \$35-40
2. An [RTL-SDR](#) dongle:
 - [RTL-SDR.COM V3](#) ~\$25 or
 - [NooElec NESDR SmarTee](#) ~\$25 or
 - [NooElec NESDR SmarTee XTR](#) ~\$40
3. [LNA](#) and [SAW filter](#) for around 1.69GHz
 - [NooElec SAWBird+ GOES](#) ~\$35

Let's put all the hardware together



Can I just download the application?

```
> brew install goestools
```

```
Updating Homebrew...
```

```
Error: No available formula with the  
name "goestools"
```

Ok looks like we need to build it

Easy enough....

```
› git clone
```

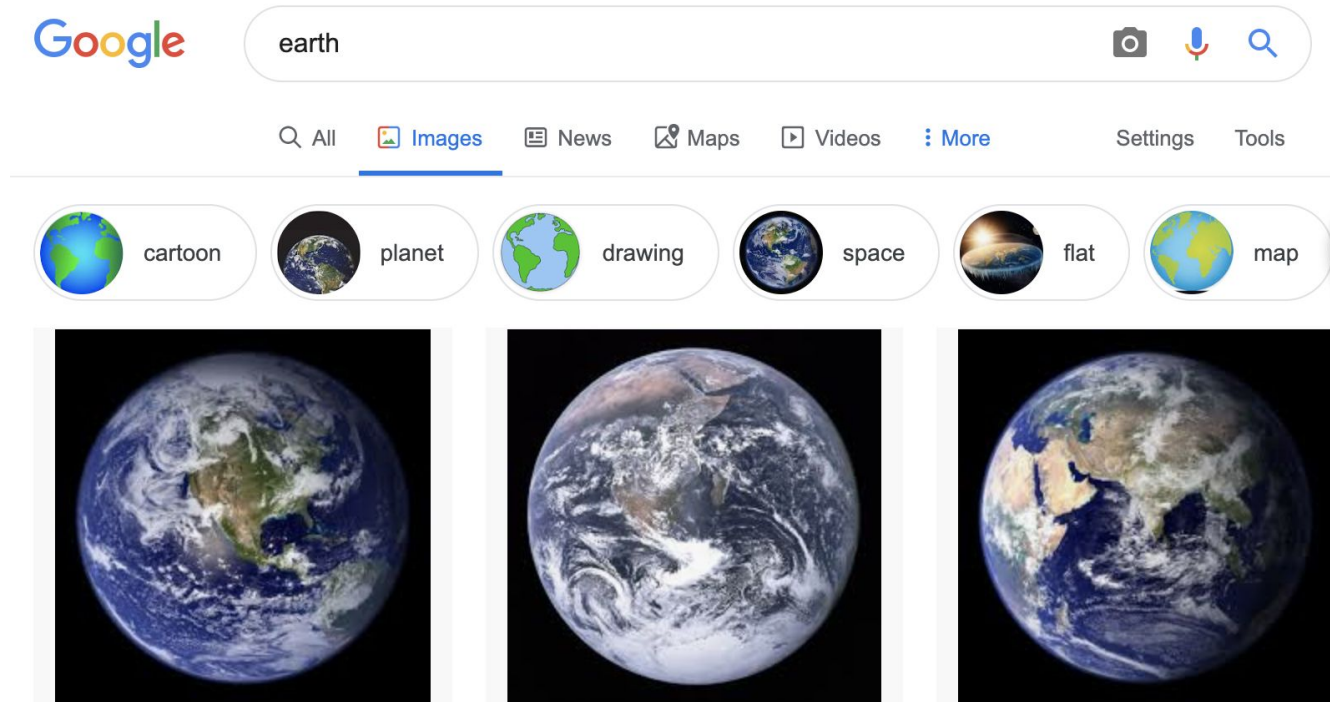
```
https://github.com/pietern/goestools.git
```

```
› cmake ..
```

```
> cmake ..  
-- Detecting C compile features  
-- Detecting C compile features - done  
CMake Warning at CMakeLists.txt:36 (find_package):  
  By not providing "FindSanitizers.cmake" in CMAKE_MODULE_PATH this project  
  has asked CMake to find a package configuration file provided by  
  "Sanitizers", but CMake did not find one.  
  
Could not find a package configuration file provided by "Sanitizers" with  
any of the following names:  
  
  SanitizersConfig.cmake  
  sanitizers-config.cmake  
  
Add the installation prefix of "Sanitizers" to CMAKE_PREFIX_PATH or set  
"Sanitizers_DIR" to a directory containing one of the above files. If  
"Sanitizers" provides a separate development package or SDK, be sure it has  
been installed.  
  
-- Configuring incomplete, errors occurred!  
See also "/Users/brennana/fosdem/goestools/build/CMakeFiles/CMakeOutput.log".
```


There must be an easier way...

The Easier Way



C/C++ Package Management



CONAN.io
C/C++ Package Manager

Packaging Goal

- Create explicit dependency graphs
- Track configured library features
- Produce binary packages to limit excessive compilation
- Reduce dependency on system libraries

Conan Recipe

```
from conans import ConanFile, CMake, tools

class LibaecConan(ConanFile):
    name = "libaec"
    license = "BSD-2-Clause"
    homepage = "https://gitlab.dkrz.de/k202009/libaec"
    description = "Adaptive Entropy Coding library"
    settings = "os", "compiler", "build_type", "arch

    def source(self):
        tools.get(**self.conan_data["sources"][self.version])
```

Conan Recipe

```
from conans import ConanFile, CMake, tools

class LibaecConan(ConanFile):
    def _configure_cmake(self):
        cmake = CMake(self)
        cmake.configure(build_folder=self._build_subfolder)
        return cmake

    def build(self):
        cmake = self._configure_cmake()
        cmake.build()
```

Conan Recipe

```
from conans import ConanFile, CMake, tools

class LibaecConan(ConanFile):
    def package(self):
        cmake = self._configure_cmake()
        cmake.install()

    def package_info(self):
        self.cpp_info.libs = tools.collect_libs(self)
```

Consume a Conan Package

```
cmake_minimum_required(VERSION 2.8)
project(SigApp)
include(${CMAKE_BINARY_DIR}/conanbuildinfo.cmake)
conan_basic_setup(TARGETS)

find_package(libaec)
add_executable(signals src/main.cpp)
target_link_libraries(signals CONAN_PKG::libaec)
```


Building a Conan Package

```
> conan create . libaec/1.0.4@
```

```
...
```

```
libaec/1.0.4 package(): Packaged 1 file: aec
```

```
libaec/1.0.4 package(): Packaged 1 '.txt' file: Copyright.txt
```

```
libaec/1.0.4 package(): Packaged 3 '.h' files: libaec.h, libaec_Export.h,  
szlib.h
```

```
libaec/1.0.4 package(): Packaged 6 '.dylib' files
```

```
libaec/1.0.4: Package '56bdca7d523d7ce4797311bae7bcb874c9b73f5c' created
```

```
libaec/1.0.4: Created package revision da06dbdda9591c0853d75c66af9be46b
```

Conan Package Configuration

```
> conan create . libaec/1.0.4@ -o shared=True -s build_type=Debug
```

Configuration:

```
[settings]
```

```
arch=x86_64
```

```
arch_build=x86_64
```

```
build_type=Debug
```

```
compiler=apple-clang
```

```
compiler.libcxx=libc++
```

```
compiler.version=11.0
```

```
os=Macos
```

```
os_build=Macos
```

```
[options]
```

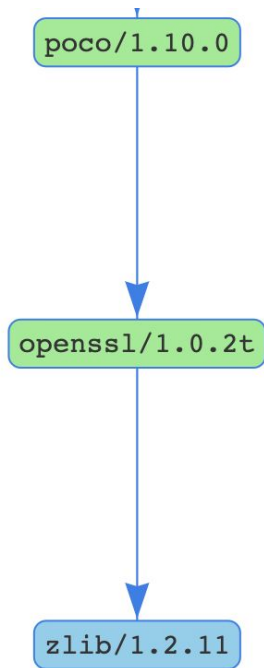
```
shared=False
```

```
[build_requires]
```

```
[env]
```

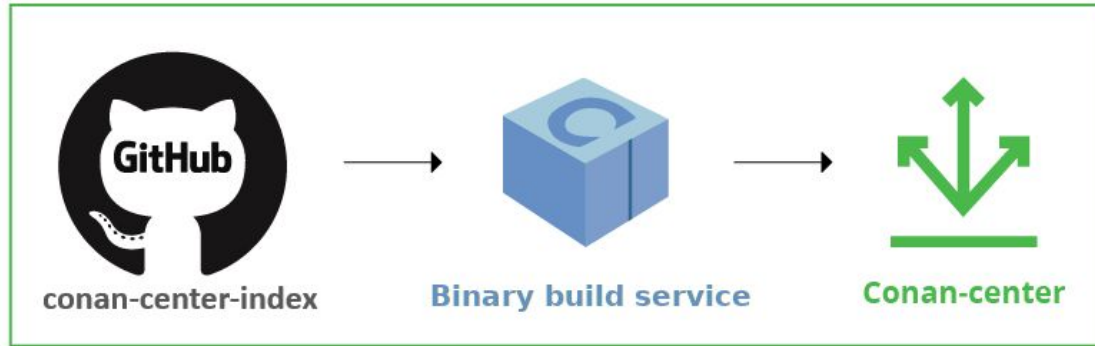
Conan Package Dependency Graph

```
› conan info poco/1.10.0@ --graph=dep.html
```



Demo Time

Sharing Your Packages



<https://conan.io/center>

<https://github.com/conan-io/conan-center-index>

zlib/1.2.11

A Massively Spiffy Yet Delicately Unobtrusive Compression Library (Also Free, Not to Mention Unencumbered by Patents)



License

Version

1.2.11

Revision

419994c54789da22

Overview

Recipe

Configuration

URL: <https://zlib.net>

Full Description:

A Massively Spiffy Yet Delicately Unobtrusive Compression Library (Also Free, Not to Mention Unencumbered by Patents)

Available Configurations (82):

Linux (52)

Windows (18)

Macos (12)

All Available Versions

zlib/1.2.11

Revisions (6)

zlib/1.2.8

Revisions (2)



CONANDAYS



GATHERING THE TRIBES

MARCH 19-20 | MADRID, SPAIN

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