# Building CSALT (Linux)

## A quick guide to building the CSALT test problem application

*July 20, 2017*

This outline shows the steps that a programmer should follow to build the CSALT library and test problem driver application.

1. Setup a copy of the CSALT code. There are 2 ways to do this:
    1. Unpack a CSALT repository archive

       *or*

    2. Clone the CSALT repository, and check out the CplusPlusMigration branch.
2. Setup the dependencies that CSALT uses, boost and snopt.
   The cmake file looks for the dependency files in the CplusPlus/depends folder. On my systems, I set up the dependencies using symbolic links. I have boost in the ~/boost_1_62_0 folder, and SNOPT (7.5) in the ~/snopt7 folder. SNOPT needs to have been compiled at this point, and you should have SNOPT libraries in lib folder (or maybe in lib/.libs). Then symbolic links can be set and checked like this:

   djc@eagleswing:~/BuildCsalt/CSALT$ **cd CplusPlus/depends/**
   djc@eagleswing:~/BuildCsalt/CSALT/CPlusPlus/depends$ **ln -s ~/boost_1_62_0/ boost**
   djc@eagleswing:~/BuildCsalt/CSALT/CPlusPlus/depends$ **ln -s ~/snopt7/ snopt**
   djc@eagleswing:~/BuildCsalt/CSALT/CPlusPlus/depends$ **ls -l**
   total 0
   lrwxrwxrwx 1 djc djc 23 Jul 20 14:01 boost -> /home/djc/boost_1_62_0/
   lrwxrwxrwx 1 djc djc 17 Jul 20 14:01 snopt -> /home/djc/snopt7/

3. Run cmake-gui
    1. Point the source code to the top level code folder (~/BuildCsalt/CSALT for me)
    2. Set a path for the build files and binaries (I use ~/BuildCsalt/CSALT/Release for release builds, and ~/BuildCsalt/CSALT/Debug for debug builds)

3. Press the Configure button. Here's what I see as the result (after expanding the tree entries):

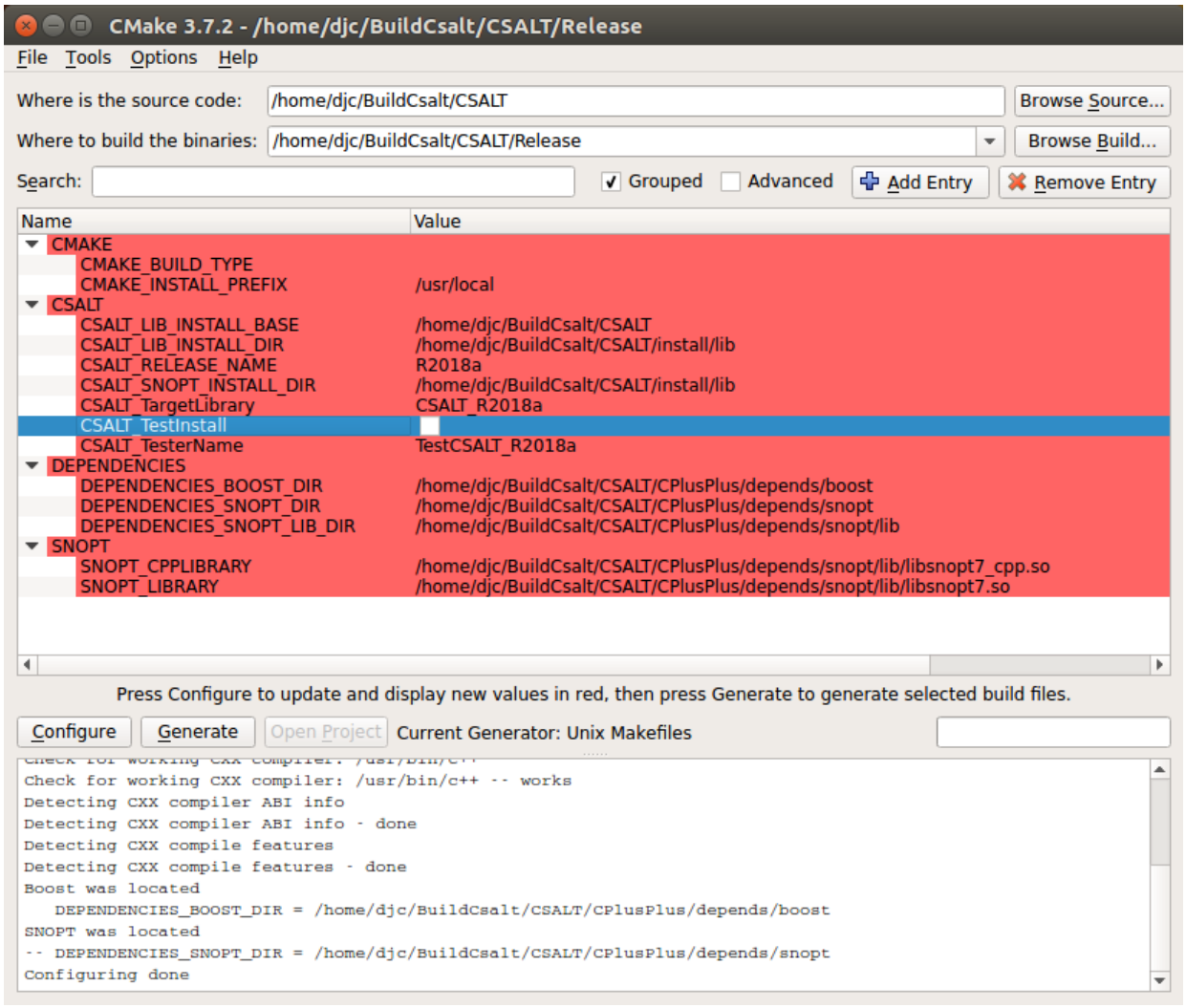


*Figure 1: CSALT setup in CMAKE*

4. Press the Generate button.

5. Build CSALT:|
   djc@eagleswing:~/BuildCsalt/CSALT/CPlusPlus/depends$ **cd ../../Release/**
   djc@eagleswing:~/BuildCsalt/CSALT/Release$ **make -j32**
   Scanning dependencies of target CSALT_R2018a
   [ 0%] Building CXX object CmakeFiles/CSALT_R2018a.dir/…
   …
   [100%] Linking CXX executable
   /home/djc/BuildCsalt/LowThrustBinary/bin/TestCSALT_R2018a
   [100%] Built target TestCSALT_R2018a

   **Note:** The build will fail for you because of the SNOPT 7.5 → 7.6 issue unless you make adjestments in the code to account for the SNOPT interface changes. Sigh.

6. Run the test program:
   djc@eagleswing:~/BuildCsalt/CSALT/Release$ cd ../../LowThrustBinary/bin/
7. djc@eagleswing:~/BuildCsalt/LowThrustBinary/bin$ ls
8. TestCSALT_R2018a
9. djc@eagleswing:~/BuildCsalt/LowThrustBinary/bin$ ./TestCSALT_R2018a

   **********
   TestOptCtrl
   **********
   Select a test case:
   0.  Exit TestOptCtrl
   …

That's it!