How to compile CC2650STK SensorTag under Linux

My main development platform, including cross compilation is a Debian Linux. I am not addicted to Linux, but many open source software are supported by this operating system and it is my main rational to have selected Debian as a development platform. The future of development is not clear in term of client OS as windows become more and more complex and you are not going to develop under android either… Anyway! For the development I want to do with the CC2560STK, I wanted to have this under Debian and the off the self Texas Instruments setting didn't allow me to do that. Why?

Why its not natively possible ?

The source code of the Sensortag application is delivered for CCS and IAR with the Texas ble stack. You can download this stack at http://www.ti.com/tool/ble-stack
One need to select the BLE-STACK-2 (BLE-STACK V2). After approval from Texas software delivery system you will end up download ble_cc26xx_setupwin32_2_00_00_42893.exe.
This is a Windows executable and they are no other option !

Main steps to "port" SensorTag cross compile to Debian

1. Make sure Debian has Wine installed (`apt-get install wine`), install ble_cc26xx_setupwin32_2_00_00_42893.exe with Wine:
   `wine ble_cc26xx_setupwin32_2_00_00_42893.exe`[1]
2. SensorTag source is in
   `~/.wine/ti/simplelink/ble_cc26xx_2_00_00_42893/Projects/ble/SensorTag`
3. Install CCS 6 Code Composer IDE http://software-dl.ti.com/ccs/esd/CCSv6/latest/[2]
4. Get the TI-RTOS version corresponding to the simplelink above (tirtos_simplelink_2_11_01_09 is a peer directory of simplelink). You can't use this as its is formated for windows. Go to http://www.ti.com/tool/TI-RTOS to download the proper version (http://software-dl.ti.com/dsps/dsps_public_sw/sdo_sb/targetcontent/tirtos/index.html): select the Linux flavor
5. Copy the simplelink folder in the <ccs install dir root> (I'll use /opt/ti from now)
6. Make sure you open CCS6 as root when you have installed TI-RTOS (and the corresponding xdctools) after close it and start it as a user again (this is to have the access rights to install CCS6 addons)
7. Open CCS6 as a user, add simplelink as an example discovery folder. Import SensorTag and SensorTagStack from the example wizard.
8. We are almost there… We need now to adapt the project to the current environment
   1. Change both projects CC26XXWARE and TI_RTOS_DRIVERS_BASE "C:/" prefix to "/opt"
   2. Verify the "Linked Resources" and adapt all the faulty references

1 You can also install the ble-stack on a windows machine and you just have to copy simplelink to Debian in step 5
2 Please accept all the default option (like the ../ti as install folder etc...

How to change CC26XXWARE and TI_RTOS_DRIVERS_BASE?

Under CCS, Select the project SensorTag, right click and select Properties (some time you need to select the project twice to have the menu pop-up on right-click: known limitation of eclipse...). Open the Resource item and click on “Linked Resources”.

Select the “Path Variables” tab. Among others you can see

- CC26XXWARE
- TI_RTOS_DRIVERS_BASE

Replace the “C:” by “/opt” (or the appropriate folder where ti rtos is installed).

Repeat the same steps for SensorTagStack project

How to review Linked Resources and change faulty references?

For each of the above mentioned projects, go to the “Path Variables” tab (same directions as “How to change CC26XXWARE…), now click on “Linked Resources”.

Resources with wrong location are set apart on the top of a list. For each of those, you need to associate the appropriate resource, most of the time, this is due to a mix of Upper/Lower case.

For example: in a source file, #include <SensorTag.h> and the actual file is “sensortag.h”. Try to keep location relative this will help port to other machines. (use Variables and see the “Variable relative location” section).

Compile and debug

After implementing all the above steps, the software should compile. Before compiling, you have to select the appropraite emulator. For CC2650STK, I have the “Debugger devPack” aka XDS110. To tune this option, Go to SensorTag project properties and select the General section.

The variant should be set to CC2650F128.

The Connection set to “Texas Instruments XDS110 USB Debug Probe”

Compile the project and “debug” to upload the image and debug it! All set!