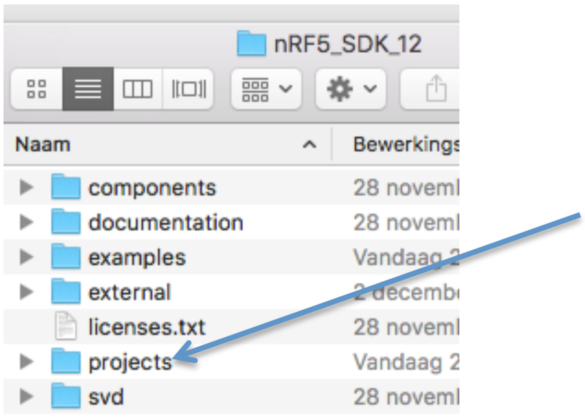
As I started to work with the nRF52DK, I struggled big time to have the SDK examples built consistently. Key elements that made it work each time for all examples are in step 12) and 15). Hope this is found usefull and would like to hear if its working out for you.

1) Unzip SDK 12.2.0 (it unzips to folder named nRF5_SDK_12)

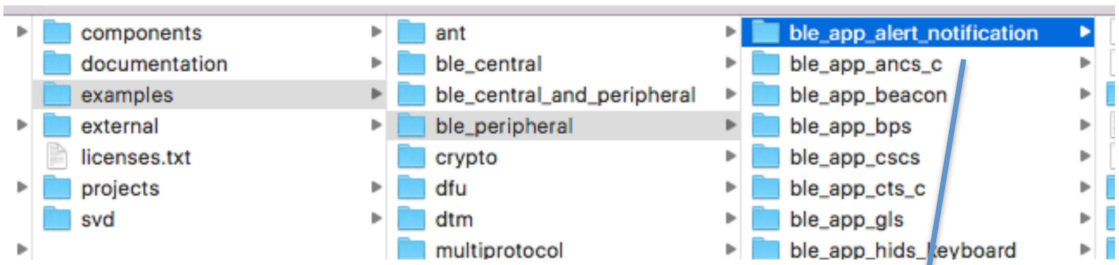
2) Create a folder named 'projects' under the SDK folder :

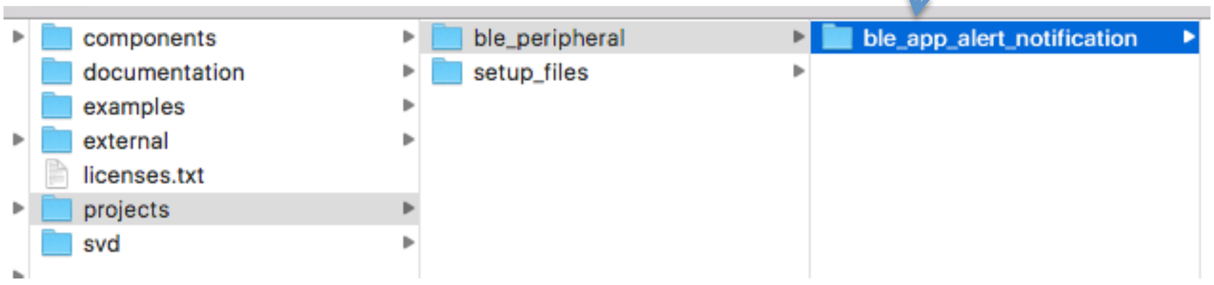


3) Create a subfolder in projects called 'ble_peripherals'(this is done to maintain same folder level structure as the examples and avoids a lot of work to rename all the ../../../../../../ in the preprocessor entries in step 13) further down.

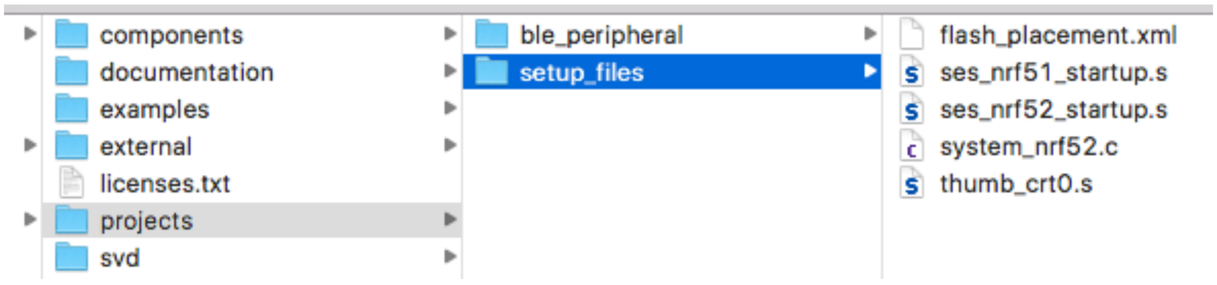
4) Create a subfolder in projects called 'setup_files' (this is done to avoid confusion on which files you will need later on the process)

5) copy over the example folder from SDK to your new project/ble_peripherals folder :



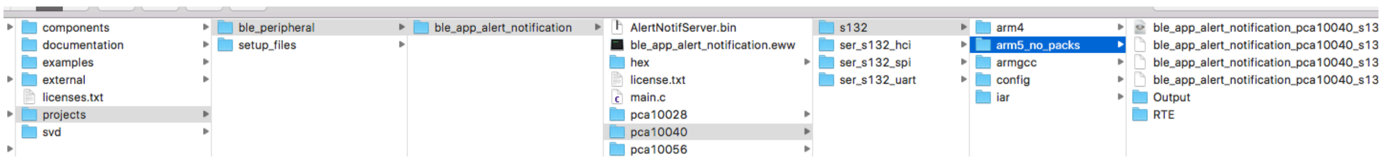


6) copy the provided files to the setup_files folder :

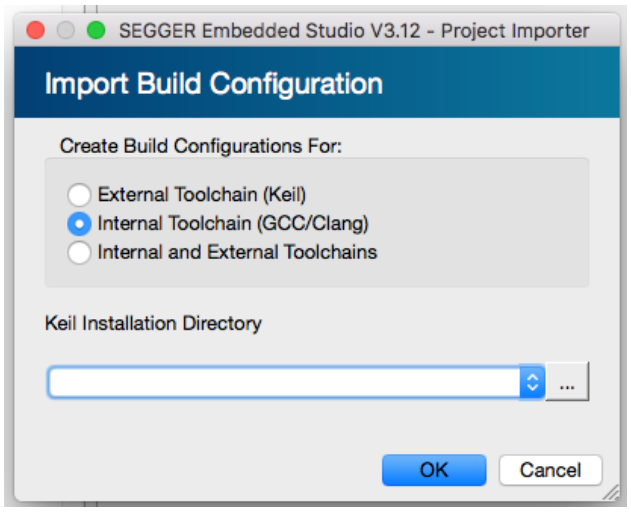


7) Start SES 3.12 and select "Import IAR EWARM / Keil MDK project" from File menu

8) Navigate to your projects folder example, select the right board folder PCA10040 (= nRF52DK) and softdevice folder (S132) and keil folder (ARM5_NO_PACKS) and the projectfile 'ble_app_alert_notification_pca10040_s132.uvprojx'



9) Choose the internal Toolchain (GCC) in the next dialogue box, you will get a message the project was imported


SEGGER Embedded Studio V3.12 - Project Importer

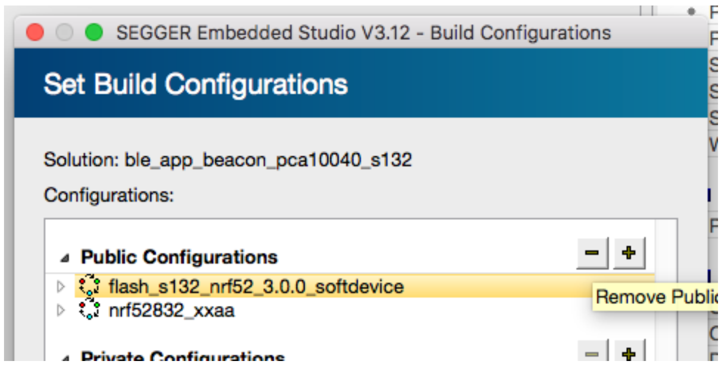
Import Build Configuration

Create Build Configurations For:

External Toolchain (Keil)
[✓ Internal Toolchain (GCC/Clang)]
Internal and External Toolchains

Keil Installation Directory

10) Go to Project – Build Configurations and delete the softdevice file by selecting it and using the minus button above

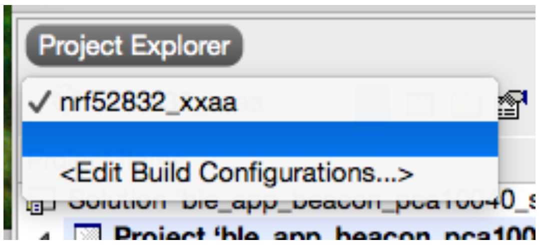

SEGGER Embedded Studio V3.12 - Build Configurations

Set Build Configurations

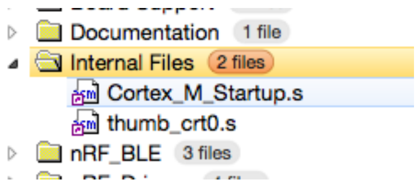
Solution: ble_app_beacon_pca10040_s132

Configurations:

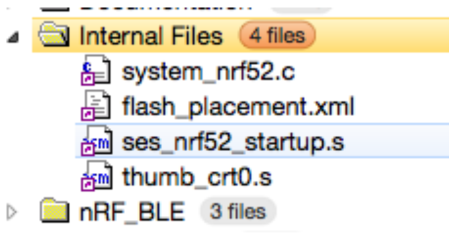
Verfiy in the drop down under the project explorer you only have 'nrf52832_xxaa' selected and nothing else:



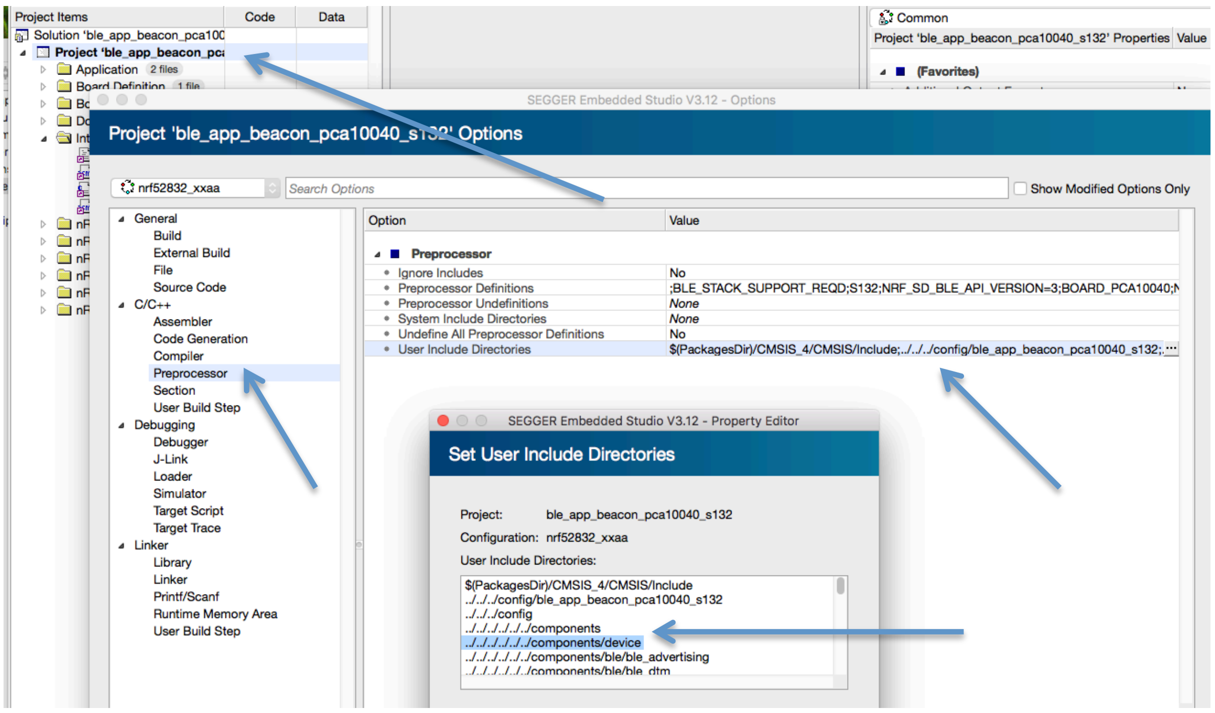
11) delete Cortex_M_Startup.s from the Internal Files folder in project explorer



12) add ses_nrf52_startup.s , flash_placement.xml, system_nrf52.c and thumb_crt0.s to the internal files folder, these are located in your setup_folder created in step 6) . Upon adding the flash_placement you'll need to confirm you want to use the section placement for your project.



13) Select/highlight the project line in the Project Explorer view (very important, the bold selected line in below screenshot), then go to Project – Edit Options … and highlight "Preprocessor" on the left, doubleclick the Value field for "User Include Directories". In the popup you highlight/select and copy the ../../../../../../components line and paste it, adding /device to it, close the window with confirming OK.



Option	Value
Preprocessor	
Ignore Includes	No
Preprocessor Definitions	;BLE_STACK_SUPPORT_REQD;S132;NRF_SD_BLE_API_VERSION=3;BOARD_PCA10040;N
Preprocessor Undefinitions	None
System Include Directories	None
Undefine All Preprocessor Definitions	No
User Include Directories	$(PackagesDir)/CMSIS_4/CMSIS/Include;../../../config/ble_app_beacon_pca10040_s132;…

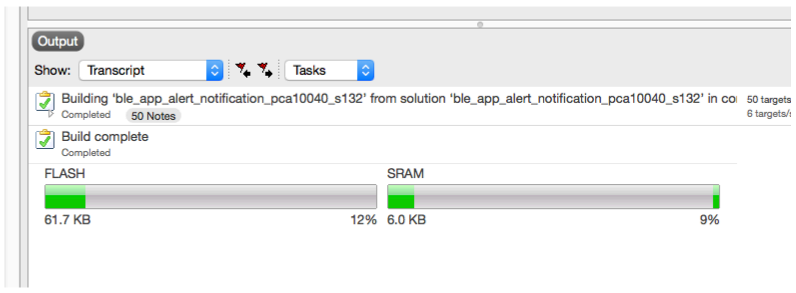
SEGGER Embedded Studio V3.12 - Property Editor

Set User Include Directories

Project: ble_app_beacon_pca10040_s132
Configuration: nrf52832_xxaa
User Include Directories:

```
$(PackagesDir)/CMSIS_4/CMSIS/Include
../../../config/ble_app_beacon_pca10040_s132
../../../config
../../../../../../components
../../../../../../components/device
../../../../../../components/ble/ble_advertising
../../../../../../components/ble/ble_dtm
```

14) We should now have all-in place to do a first attempt to build, select "build" and the top menu item to build your project. This should give you the following FLASH and SRAM result in the output window:

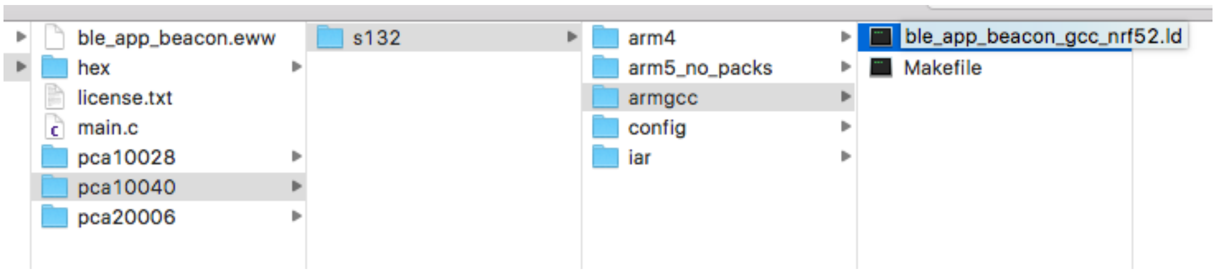


Building 'ble_app_alert_notification_pca10040_s132' from solution 'ble_app_alert_notification_pca10040_s132' in co
Completed 50 Notes
50 targets
6 targets/
Build complete
Completed

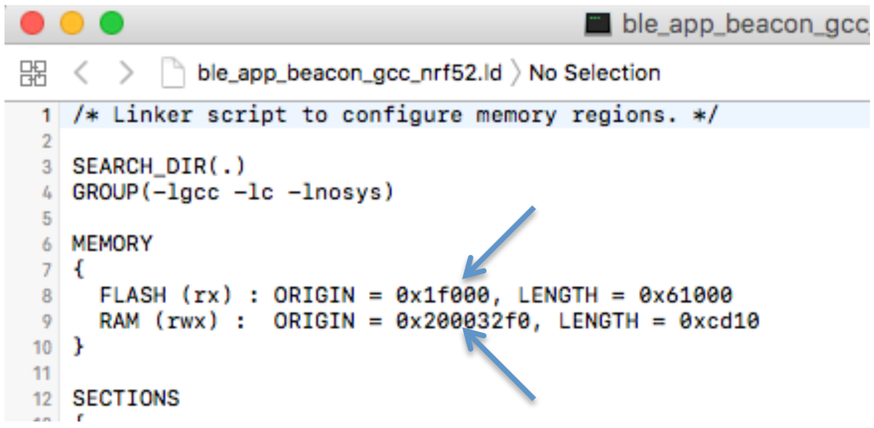
FLASH		SRAM	
61.7 KB	12%	6.0 KB	9%

As you can see there is overlap with where the Softdevice should land, I found most other instructions unclear what needs to be done next, here the details to make it work :

15) First, it is important to know what the start position should be for the FLASH and SRAM. The FLASH is related to the Softdevice and S132 will for most current builds require you to start your code at 0x1F000. The SRAM I have not found more clear info then to derive it from the info provided in the example itself. Navigate with finder to your project example folder and select the .ld file in the armgcc file.



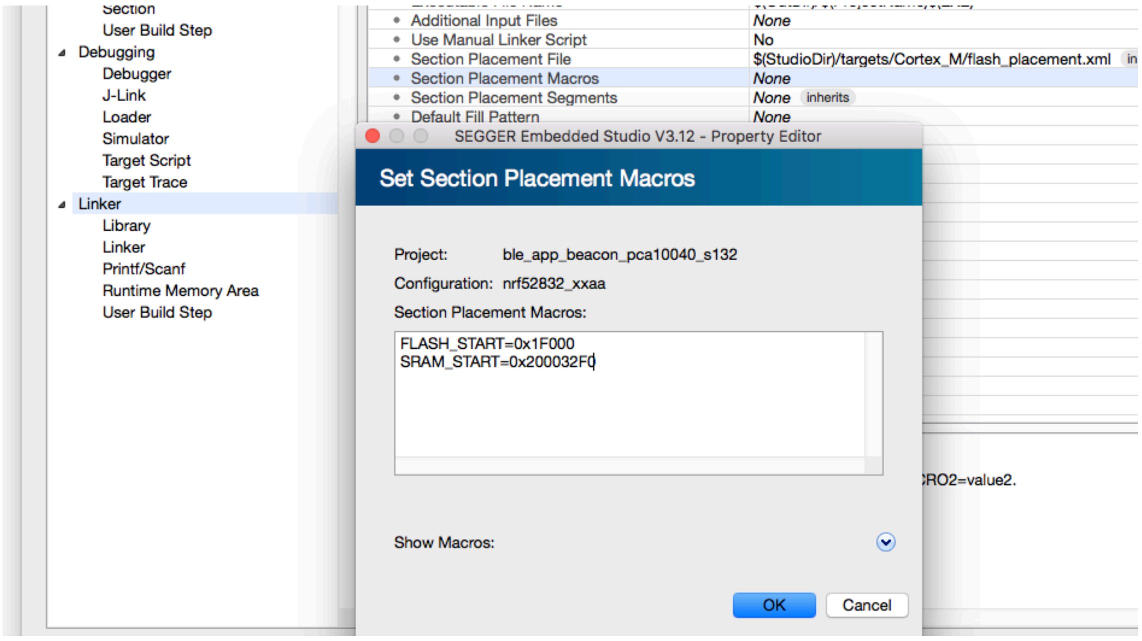
Open it, any tekst viewer will do (in my case Xcode opens it nicely)



```
/* Linker script to configure memory regions. */

SEARCH_DIR(.)
GROUP(-lgcc -lc -lnosys)

MEMORY
{
  FLASH (rx) : ORIGIN = 0x1f000, LENGTH = 0x61000
  RAM (rwx) :  ORIGIN = 0x200032f0, LENGTH = 0xcd10
}

SECTIONS
```

Note the start values for FLASH and RAM, in above example it’s 0x1F000 and 0x200032F0.

16) Back to SES, highlight the project itself (important, same bold selection in the project explorer on the left as in step 13). Then select project – Edit Options and select Linker on the left, doubleclick the value of the option. Enter FLASH_START= and SRAM_START= and add the values noted in previous step.

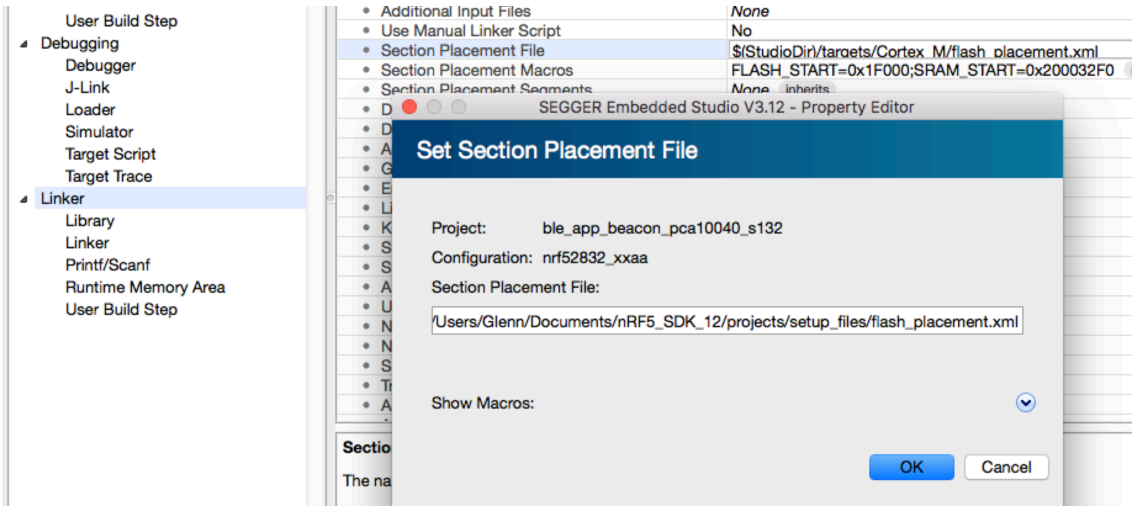


Additional Input Files: None
Use Manual Linker Script: No
Section Placement File: $(StudioDir)/targets/Cortex_M/flash_placement.xml
Section Placement Macros: None
Section Placement Segments: None inherits
Default Fill Pattern: None

Project: ble_app_beacon_pca10040_s132
Configuration: nrf52832_xxaa
Section Placement Macros:

```
FLASH_START=0x1F000
SRAM_START=0x200032F0
```

17) After confirming with OK, doubleclick the Option above called Section Placement File and select the flash_placement.xml file from your setup_files folder instead of the one from the SES folder:



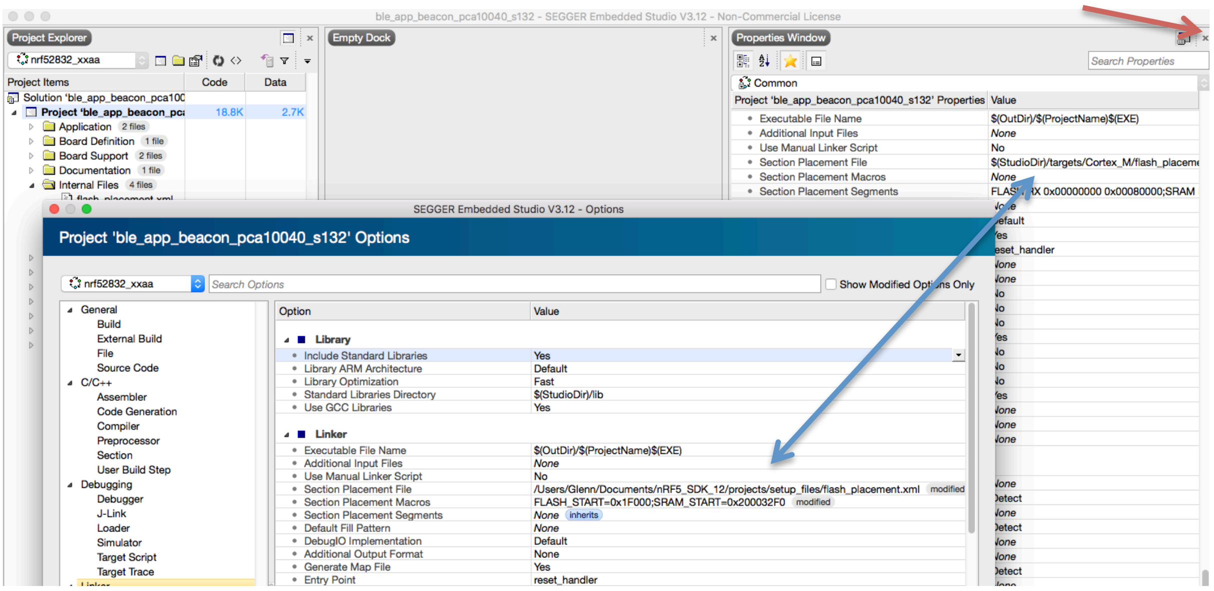
Additional Input Files: None
Use Manual Linker Script: No
Section Placement File: $(StudioDir)/targets/Cortex_M/flash_placement.xml
Section Placement Macros: FLASH_START=0x1F000;SRAM_START=0x200032F0
Section Placement Segments: None inherits

Project: ble_app_beacon_pca10040_s132
Configuration: nrf52832_xxaa
Section Placement File:

```
/Users/Glenn/Documents/nRF5_SDK_12/projects/setup_files/flash_placement.xml
```

18) At this stage, I got confused when I looked in the Properties window on the right , the values for Section Placement File and Section Placement Macros are not the same as we set in step 17 – this has to do with the selection of the Common or nrF52832 config in the pull down on top of the properies window (thanks Sigurd @Nordic).

Btw, in case someone closes the properties window and can't seem to get it back, select 'close solution' from the File menu and then reopen your project to get it back.



ble_app_beacon_pca10040_s132 - SEGGER Embedded Studio V3.12 - Non-Commercial License

Project Explorer — nrf52832_xxaa

Project Items	Code	Data
Solution 'ble_app_beacon_pca100		
Project 'ble_app_beacon_pca	18.8K	2.7K
Application 2 files		
Board Definition 1 file		
Board Support 2 files		
Documentation 1 file		
Internal Files 4 files		
flash_placement.xml		

Properties Window — Common

Project 'ble_app_beacon_pca10040_s132' Properties	Value
Executable File Name	$(OutDir)/$(ProjectName)$(EXE)
Additional Input Files	None
Use Manual Linker Script	No
Section Placement File	$(StudioDir)/targets/Cortex_M/flash_placeme
Section Placement Macros	None
Section Placement Segments	FLASH RX 0x00000000 0x00080000;SRAM

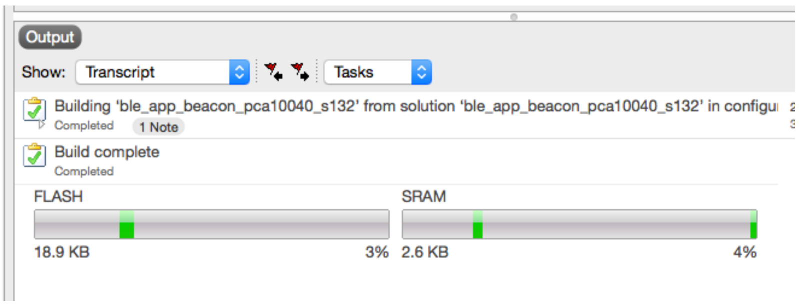
SEGGER Embedded Studio V3.12 - Options

Project 'ble_app_beacon_pca10040_s132' Options

nrf52832_xxaa — Search Options — Show Modified Options Only

Option	Value
Library	
Include Standard Libraries	Yes
Library ARM Architecture	Default
Library Optimization	Fast
Standard Libraries Directory	$(StudioDir)/lib
Use GCC Libraries	Yes
Linker	
Executable File Name	$(OutDir)/$(ProjectName)$(EXE)
Additional Input Files	None
Use Manual Linker Script	No
Section Placement File	/Users/Glenn/Documents/nRF5_SDK_12/projects/setup_files/flash_placement.xml modified
Section Placement Macros	FLASH_START=0x1F000;SRAM_START=0x200032F0 modified
Section Placement Segments	None inherits
Default Fill Pattern	None
DebugIO Implementation	Default
Additional Output Format	None
Generate Map File	Yes
Entry Point	reset_handler

19) When you've update for FLASH and SRAM start adresses and the placement file on both places, you build and you should get something similar as below :



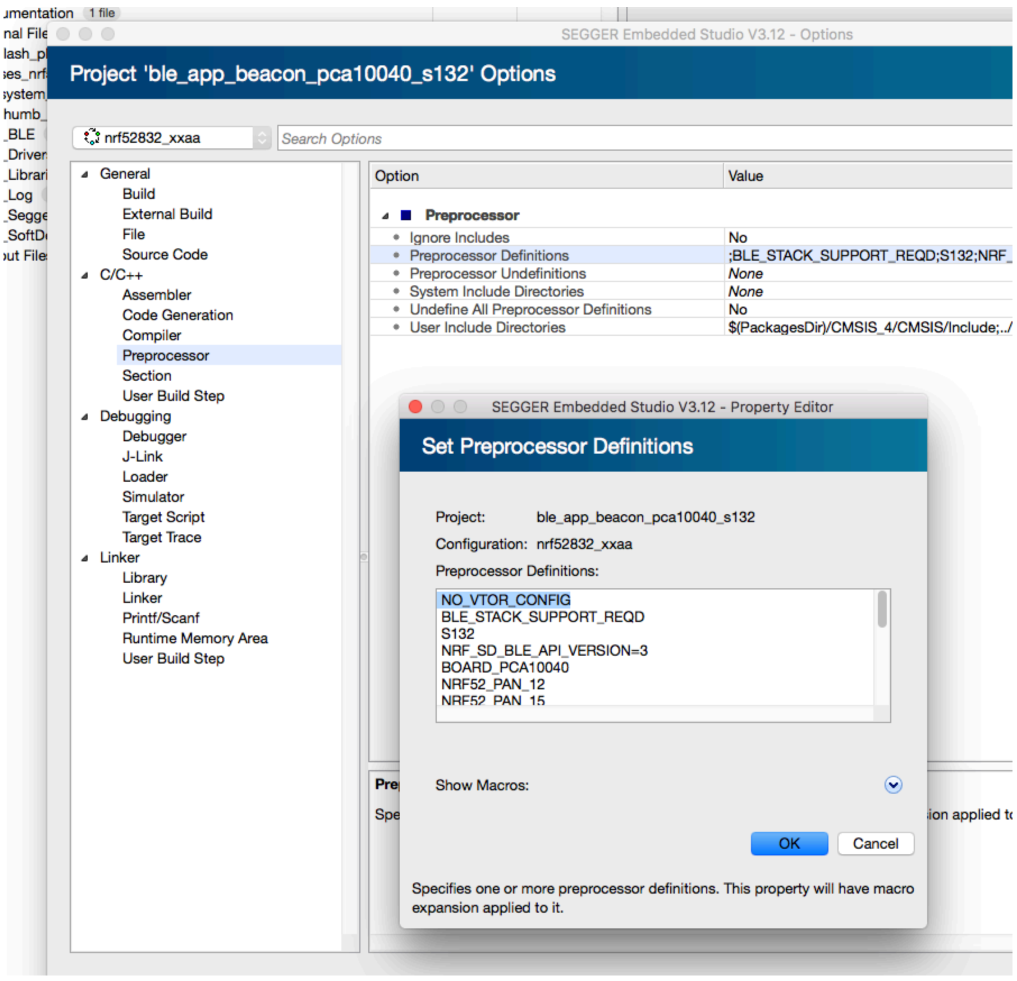
Output

Show: Transcript — Tasks

```
Building 'ble_app_beacon_pca10040_s132' from solution 'ble_app_beacon_pca10040_s132' in configu
Completed   1 Note
Build complete
Completed
```

FLASH		SRAM	
18.9 KB	3%	2.6 KB	4%

20) Last thing to do is to to add NO_VTOR_CONFIG to the Preprocessor Definitions by selecting the project line, do Project – Edit Options … and selecting Preprocessor on the left.



SEGGER Embedded Studio V3.12 - Options

Project 'ble_app_beacon_pca10040_s132' Options

nrf52832_xxaa

Option	Value
Preprocessor	
Ignore Includes	No
Preprocessor Definitions	;BLE_STACK_SUPPORT_REQD;S132;NRF_
Preprocessor Undefinitions	*None*
System Include Directories	*None*
Undefine All Preprocessor Definitions	No
User Include Directories	$(PackagesDir)/CMSIS_4/CMSIS/Include;../

SEGGER Embedded Studio V3.12 - Property Editor

Set Preprocessor Definitions

Project: ble_app_beacon_pca10040_s132
Configuration: nrf52832_xxaa
Preprocessor Definitions:

```
NO_VTOR_CONFIG
BLE_STACK_SUPPORT_REQD
S132
NRF_SD_BLE_API_VERSION=3
BOARD_PCA10040
NRF52_PAN_12
NRF52_PAN_15
```

Show Macros:

Specifies one or more preprocessor definitions. This property will have macro expansion applied to it.

21) After confirming OK you can Build, connect to your DK board via Target – Connect J-Link and download your application. Make sure you have uploaded your softdevice (S132) and you should have a working example on your DK board !