
Memory Configuration Editor and External Flash Driver mechanism

Introduction

By default, Red Suite/LPCXpresso provides a standard memory layout for known MCUs. This works well for parts with internal flash and no external memory capability, as it allows linker scripts to be automatically generated for use when building projects, and built in support for programming flash, as well as other debug capabilities.

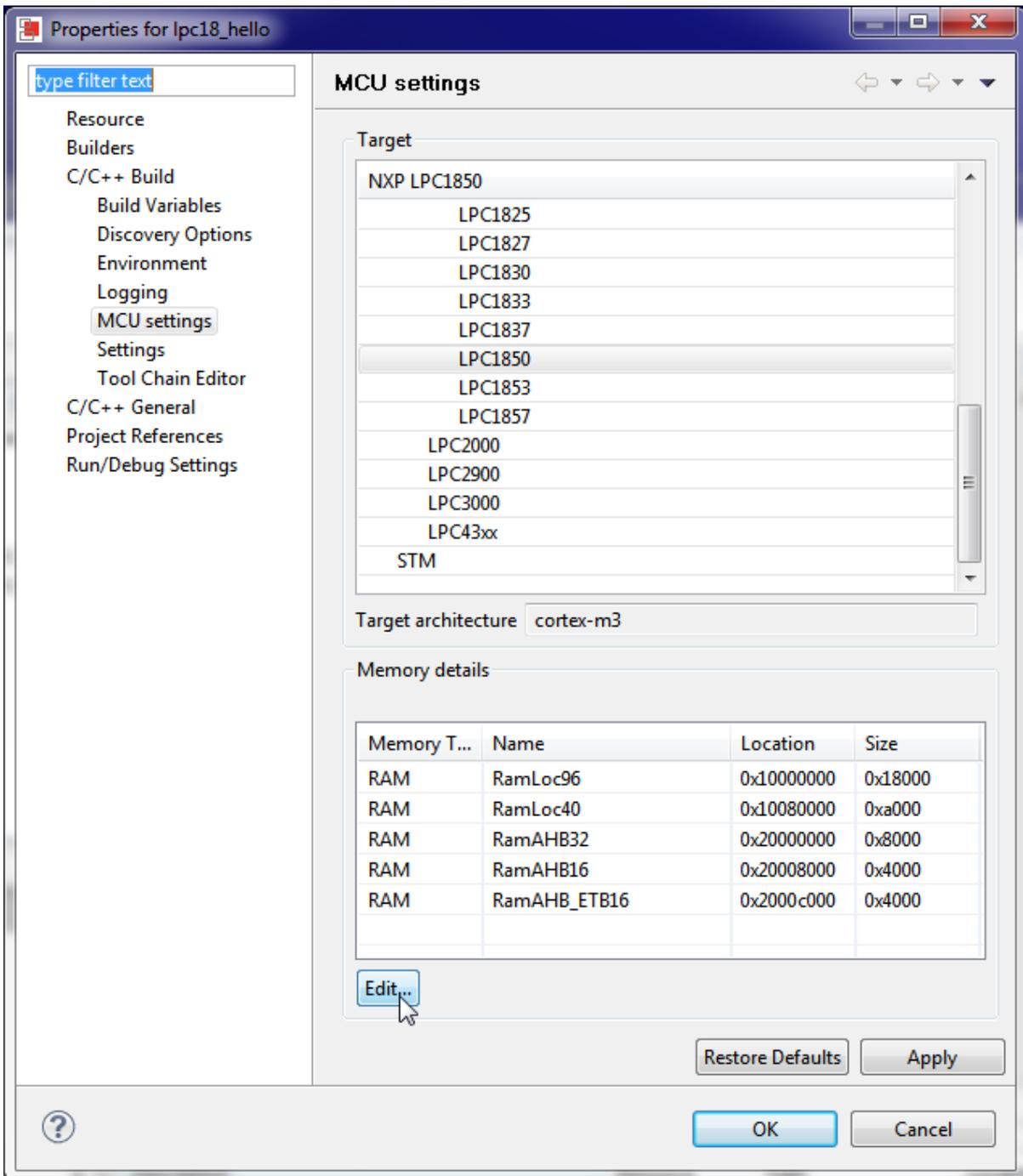
Red Suite/LPCXpresso 4.2 introduced a new mechanism for editing the target memory layout used for a project. This allows for the details of external flash to be defined or for the layout of internal RAM to be reconfigured. In addition, it allows a flash driver to be allocated for use with parts with no internal flash, but where an external flash part is connected.

Memory Editor

The Memory Editor is accessed via the MCU settings dialog, which can be found at:

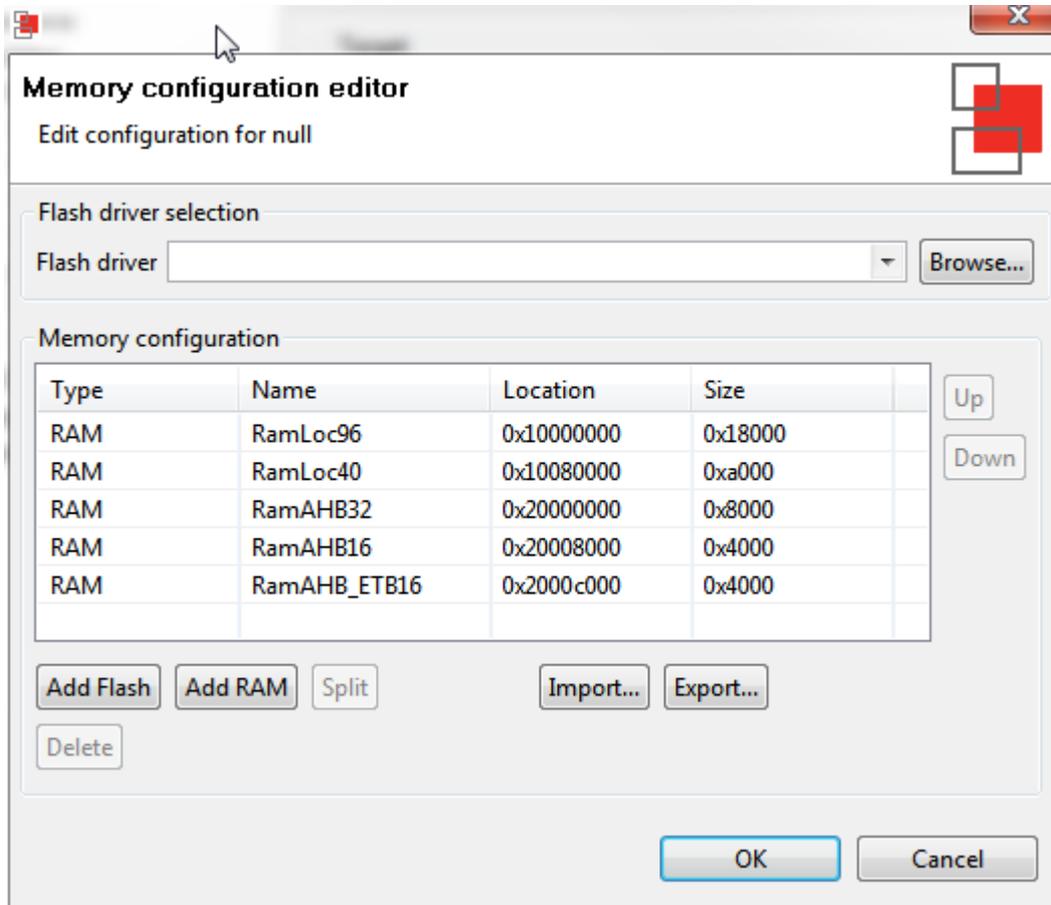
```
Project Properties -> C/C++ Build -> MCU settings
```

This lists the memory details for the selected MCU, and will, by default, display the memory regions that have been defined by Red Suite/LPCXpresso itself.



Editing a memory configuration

Selecting the “Edit...” button, will launch the “Memory configuration editor” dialog:



Known blocks of memory, their type, base location and size are displayed. Entries can be created/deleted/etc. by using the provided buttons:

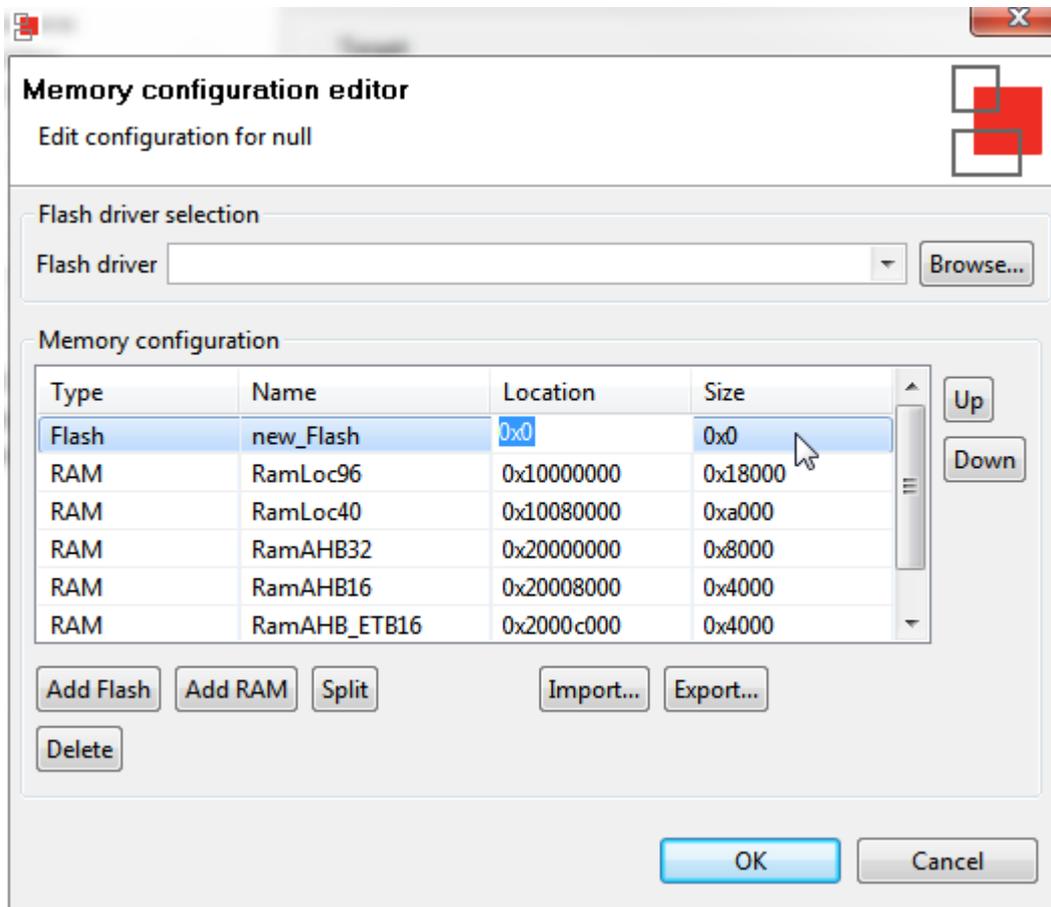
Button	Details
Add Flash	Add a new memory block of the appropriate type.
Add RAM	
Split	Splits the selected memory block into two equal halves.
Delete	Deletes the selected memory block.
Export	Exports a memory configuration for use in another project.
Import	Imports a memory configuration that has been exported from another project.
Up / Down	Reorder memory blocks. This is important as if there is no flash block, then code will be placed in the first RAM block. And data will be placed in the block following the one used for the code (regardless of whether the code block was RAM or Flash).
Browse... (Flash driver)	Select the appropriate driver for programming the flash memory specified in the memory configuration. This is only required when the flash memory is external to the MCU. Flash drivers for external flash must have a ".cfx" file extension and must be located in the <code>\bin\flash</code> subdirectory of the Red Suite/LPCXpresso installation. For more details see section 0, External flash drivers .

The name, location and size of this new region can be edited in place. Note that when entering the size of the region, you can enter full values in decimal, hex (by prefixing with 0x), or by specifying the size in kilobytes or megabytes. For example:

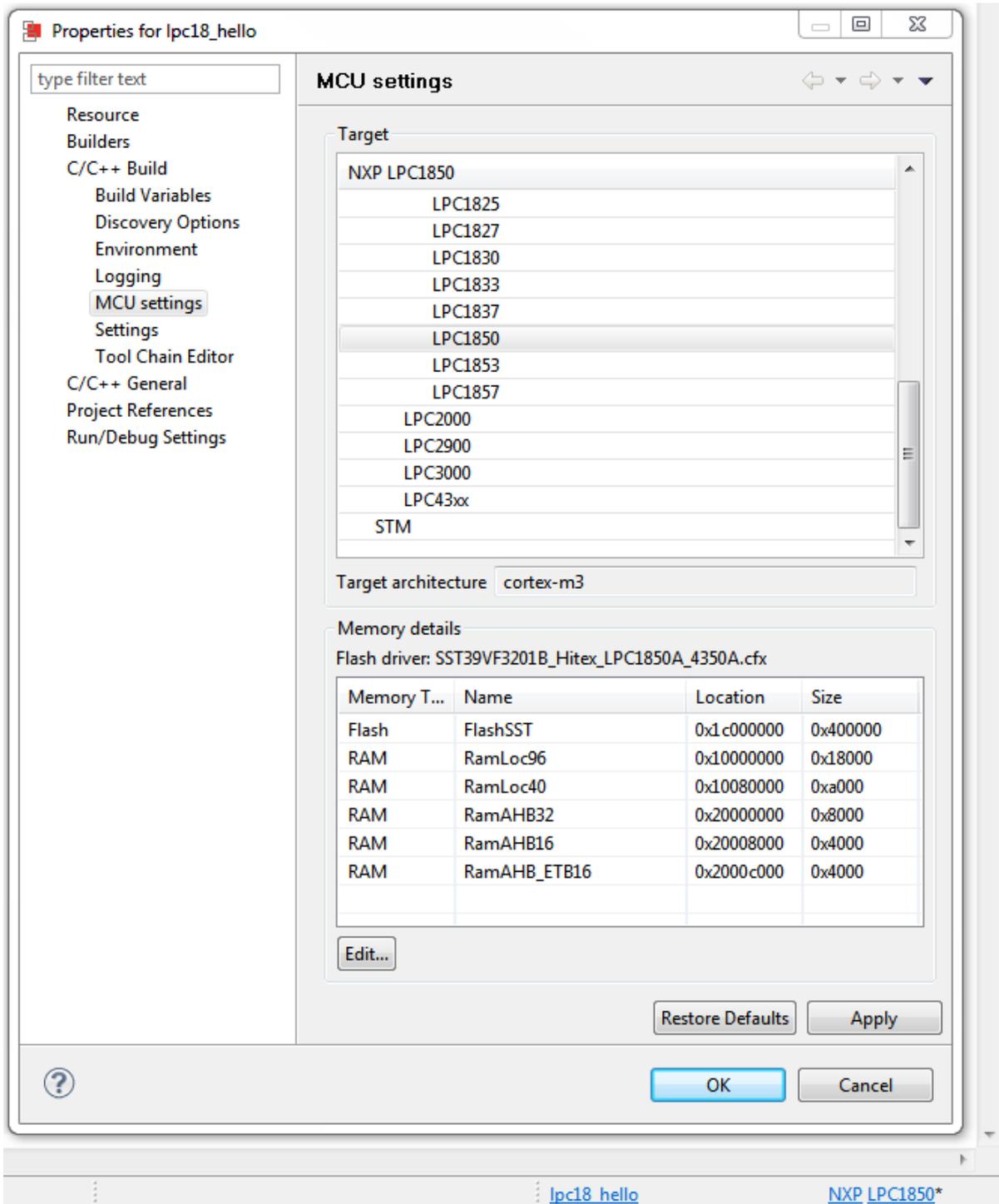
- To enter a region size of 32KB, enter "32768" "0x8000" or "32k".
- To enter a region size of 1MB, enter "0x100000" or "1m".

Note that memory regions must be located on 4 byte boundaries, and be a multiple of 4 bytes in size.

The following screenshot show the dialog after the “Add Flash” button has been clicked:



After updating the memory configuration, click “OK” to return to the MCU settings dialog, which will be updated to reflect the new configuration.



Note that the memory details have been modified, the selected MCU as displayed on the Red Suite/LPCXpresso 'Status Bar' (at the bottom right of the IDE window) will be displayed with an asterisk (*) next to it. This provides an indication that the MCU memory configuration settings for the selected project have been modified, without needing to open up the MCU settings dialog.

Restoring a memory configuration

To restore a memory configuration, simply reselect the MCU type in the MCU Settings properties page.

Copying memory configurations

Memory configurations can be exported for import into another project. Use the Export... and Import... buttons for this purpose.

External flash drivers

Flash drivers for external flash must have a “.cfx” file extension and must be located in the `\bin\flash` subdirectory of the Red Suite/LPCXpresso installation.

For example, the “SST39VF3201B_Hitex_LPC1850A_4350A.cfx” driver is for use programming the external 4MB parallel flash fitted to the Hitex LP1850A/LPC4350A evaluation board (SST39VF3201B).

Source code for external flash drivers is also provided in the `\Examples\FlashDrivers` subdirectory of the Red Suite/LPCXpresso installation.

Note that the `\bin\flash` subdirectory may also contain some drivers for the built-in flash on some MCUs. It should be clear from the filenames as to which these are. Do not try to use these drivers for external flash on other MCUs!