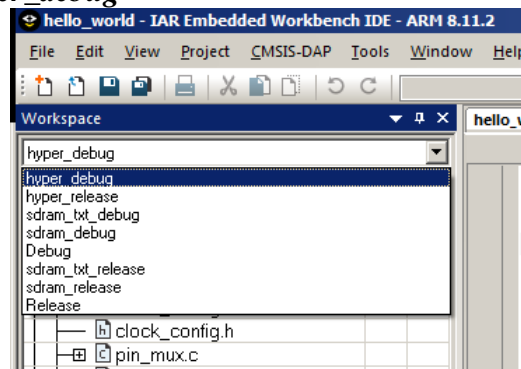


1.1.1 Hello world (hyper_debug or flexspi_nor_debug) – HyperFLASH for code execution and DTCM for data access

The code executed from HyperFLASH and data accessed by DTCM represents the last case. In this case the image cannot be downloaded directly by the IAR debugger. We will use OpenSDA MSD to download the image into the HyperFLASH.


NOTE: On board HyperFLASH device uses FlexSPI module which uses system AXI bus interface for data access by ARM Cortex M7. It is expected that the instruction fetches are not as fast as through ITCM due to FlexSPI clock etc. However, the AXI bus includes 32k L1 I-CACHE for the instruction fetches. If the size of code is not higher than size of CACHE (this case) we can expect single cycle access after all code cached.

1. Select the appropriate target project configuration from the drop-down list in the Workspace viewer: *hyper_debug*

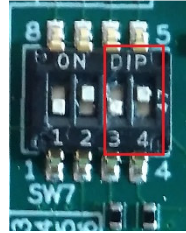


2. This configuration will select the corresponding linker file (*MIMXRT1052xxx6A_hyper.icf*) into the project
3. In this file, you can see definitions of the interrupt vector table / text (or code) and data:

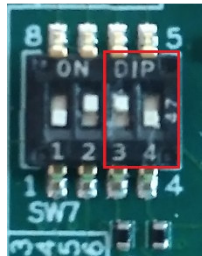
Memory	assigned to	Linker definition
HyperFLASH	vector table + code	define symbol m_interrupts_start = 0x60002000;
		define symbol m_interrupts_end = 0x600023FF;
		define symbol m_text_start = 0x60002400;
		define symbol m_text_end = 0x64001FFF;
DTCM	static data + stack	define symbol m_data_start = 0x20000000;
		define symbol m_data_end = 0x2001FFFF;
OCRAM	no used	define symbol m_data2_start = 0x20200000;
		define symbol m_data2_end = 0x2023FFFF;

4. Build the project (press F7):  no error / warning should appear.
5. After build done with no error, look for corresponding *hello_world.bin* image file. It should be located in:
SDK folder...boards\evkmimxrt1050\demo_apps\hello_worldiar\hyper_debug

6. Configure the MIMXRT1050-EVK board into BOOT_MODE[1:0] = 00, or 01. It means the serial downloader mode.



7. Reset the on board iMXRT1050 device by pressing SW3 to get into the serial downloader mode
8. Drag-and-drop (or simply copy) the *hello_world.bin* image file into the EVK-MIMXRT drive
9. Wait for download done.
10. Configure the MIMXRT1050-EVK board into BOOT_MODE[1:0] = 10. It means the internal boot with boot configuration selected to HyperFLASH 1V8.



11. Press SW3 button to reset device and boot from HyperFLASH
12. In the PC terminal window the text message “*Hello world.*” should appear
13. All characters sent over terminal will be replied back to terminal by iMXRT device

NOTE: You can verify the code / data placement by looking into the output *hello_world.map* file to see the symbol placement.