Using Keil MDK v5.11 with STMicroelectronics STM32 devices

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Abstract

Keil MDK Version 5.11 includes the Software Packs CMSIS Version 4.1 and MDK-Middleware Version 6.0 that are **incompatible with the current STM32 Device Family Packs**. This document describes the reasons and outlines the resolution.

Contents

CMSIS Version 4.1 contains the **CMSIS-Driver API Version 2**, which is incompatible with **Drivers** Version 1. All STM32 Device Family Packs Version 1.x implement **Drivers** based on Version 1.x and are therefore <u>not compatible</u>.

However, new Middleware for STM32 Device Family Packs Version 1.x are available that solve many known issues.

CMSIS and Middleware Packs for STM32 Device Family Packs Version 1.x

The current STM32 Device Family Packs require the following versions of CMSIS and MDK-Middleware to be installed. Projects using the **STM32 Device Family Packs Version 1.x** need to be configured to use these versions of the Packs.

The steps to install the STM32 compatible Software Packs are:

1. Download the following Software Packs with your web browser:
   http://www.keil.com/pack/ARM.CMSIS.3.20.4.pack
   http://www.keil.com/pack/Keil.MDK-Middleware.5.1.6.pack
2. To install, double-click on the files or open the MDK Pack Installer and select **File - Import** and choose the downloaded files.

Configuring projects to use specific versions of Packs
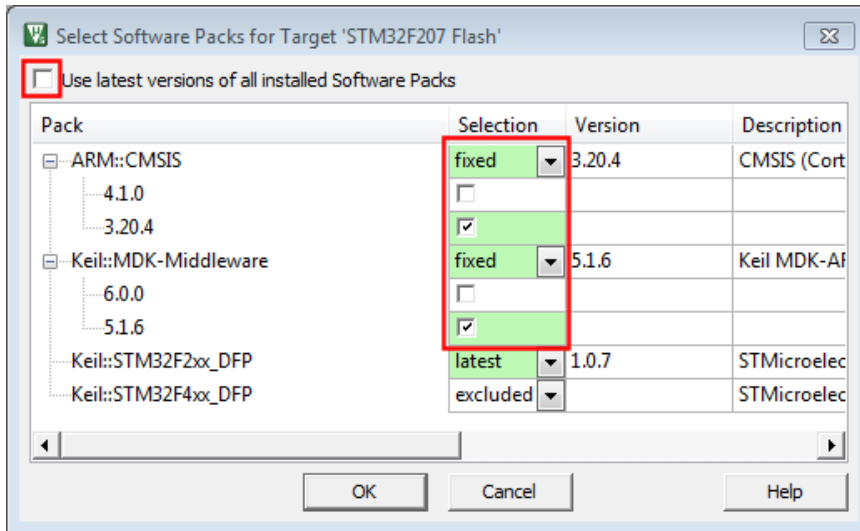
New and existing projects need to be configured to use the newly installed versions of the CMSIS and MDK-Middleware Packs.

The steps to configure STM32 projects for using compatible Software Packs are:

1. Click the **Select Pack** button.

2. Uncheck **Use latest versions of all installed Software Packs**.

3. Expand the **ARM::CMSIS** and **Keil::MDK-Middleware** Packs to display all installed versions.
   In the Selection column, select **fixed** for both Packs and choose **ARM::CMSIS 3.20.4** and **Keil::MDK-Middleware 5.1.6**.

1

The project now is set up to use the appropriate Pack versions.

Changes in STM32 Device Family Packs and MDK-Middleware

Keil.STM32F2xx_DFP.1.0.5 - 1.0.7:

- Corrected: I2C driver for receiving short messages (2 bytes)
- Corrected: I2C driver register access
- Corrected: USB Device Driver: multiple packet read, EP0 configuration
- Corrected: SPI Driver IRQ handling

Keil.STM32F4xx_DFP.1.0.5 - 1.0.8:

- Added: UART and GPIO extended for UART7 and UART8
- Added: STM32F401 Devices and support for STM32F401C-Discovery Board
- Updated: STM Peripheral Library V1.3.0
- Corrected: I2C driver for receiving short messages (2 bytes)
- Corrected: Flash Option Byte Programming
- Corrected: USB Device Driver: multiple packet read, EP0 configuration
- Corrected: SPI Driver IRQ handling

Keil.MDK-Middleware 5.1.6:

- Added: Networking – sntp_client_init and sntp_client_run prototypes
- Corrected: USB Device – USB Custom Calls event handling, build issue and Class Template
- Corrected: USB Host - polling rate issue when Interrupt Endpoint requests "bInterval = 1"

STM32 Device Family Packs Version 2.x

STMicroelectronics has introduced the new STM32Cube software platform and STM32CubeMX graphical configuration tool. ARM is currently working closely with STMicroelectronics to develop Device Drivers that make use of the STM32Cube libraries and are compatible with CMSIS-Driver API 2.02. At the same time, we plan to integrate STM32CubeMX and Keil MDK such that the code generated by STM32CubeMX will be used to configure the drivers. This will greatly simplify device and driver configuration and provide more robust configurations and drivers.

During this transition phase, developers targeting STM32 devices are required to use the previous version of CMSIS and MDK-Middleware. The new STM32 Device Family Packs providing CMSIS-Driver API 2.02 compliant drivers will carry the major version 2.