32-bit MCU SDK 5.5.0.0

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This document contains a description of changes from version 5.4.0.0 to 5.5.0.0 of the 32-bit MCU Software Development Kit (SDK). The 32-bit MCU SDK is installed with Gecko SDK Suite 2.3.0 in Simplicity Studio for EFM32 and EZR32 products. For detailed changelog for the different components in the MCU SDK then see the various changelog txt files that are placed inside the MCU SDK install location.

1 Release Highlights

1.1 Gecko HAL & Driver:

- ARM mbed TLS

    - Updated to upstream release v2.7.1.
    - New ADC and RAIL entropy plugins.

- New NVM3 Non-Volatile Memory Management driver.

- Gecko USB Host and Device stacks for EFM32 Giant Gecko 11.

- Bugfixes.

1.2 New EFM32 example applications:

- New Micrium OS example demonstrating the use of the new CANOpen stack on EFM32 Giant Gecko 11 Starter Kit.

1.3 Using This Release

32-bit MCU SDK 5.5.0.0 is installed with Gecko SDK Suite 2.3.0 in Simplicity Studio for EFM32 and EZR32 products. This release contains the following.

- Gecko HAL & Driver (a part of the Gecko Platform component)

- EFM32 example applications

1.4 Support

Development Kit customers are eligible for training and technical support. You can use the Silicon Laboratories web site https://www.silabs.com/products/mcu/32-bit to obtain information about all EFM32 Microcontroller products and services, and to sign up for product support.

You can contact Silicon Laboratories support at http://www.silabs.com/support

2 Added Items

2.1 Gecko HAL & Driver:

- EMLIB

  - Added support additional HFPERCLK trees on EFM32 Giant Gecko 11.
  - Added autoCsEnable parameter to USAR InitSync TypeDef and USART InitAsync TypeDef for series 0 parts.
  - Added EMU RamPowerUp() function for series 1 devices to power up all SRAM blocks.
  - Adding restoring of HFRCO frequency when calling EMU EnterEM2(true) and voltage scaling is enable in EM2/EM3.
  - Added support for opamp OPA3.

- NVM3 driver (EMDRV)

  - New NVM3 Non-Volatile Memory Management driver for EFM32 and EFR32.
  - NVM3 API documentation: http://devtools.silabs.com/dl/documentation/doxygen/5.5/efm32gg11/html/group__NVM3.html

- Platform Middleware

  - Added support Giant Gecko 11 in Gecko USB Host and Device stacks.

- mbedTLS

  - Added ADC and RAIL entropy plugins.

2.2 EFM32 example applications:

- New EFM32 Giant Gecko 11 example application: micriumos canopen
- Added Keil MDK project files for all EFM32 Tiny and Giant Gecko example applications.

3 Fixed Issues

3.1 Gecko HAL & Driver:

- EMLIB

  - Fixed issue where TX data could be lost when calling LEUART TxDmaInEM2Enable() when transmitter is enabled and sending data.
  - Added support for unaligned data in CRYPTO AES functions.
  - In ADC asynchronous clock mode, assert on ADC clock frequency less or equal to 2/3 of the HFPER clock frequency.
  - In ADC Init(), set ADC clock mode for correct ADC instance.
  - Change behavior of GPIO EM4SetPinRetention() so it does not overwrite GPIO retention config when SWUNLATCH is already set.
  - Check RSTEN before waiting for register synchronization in BURTC module.
  - Fixed bug with wait-state handling when low-voltage mode is used in EM2/EM3. This was fixed by enabling automatic hardware handling of wait-states.
  - Changed minimum 'N' requirement in CMU DPLLLock() from 32 to greater than 300.
  - Added support for USBLE clock in CMU ClockFreqGet().

- EMDRV

  - Changed SPIDRV MISO pin configuration from input-pull-down to input mode without pull-down.

3.2 EFM32 example applications:

- persistent_trng example fixed for armgcc and Keil MDK compilers.

4 Changed Items

4.1 Gecko HAL & Driver:

- ARM mbed TLS
  - Updated to upstream release v2.7.1. More info from ARM available at `https://tls.mbed.org/tech-updates/releases/mbedtls-2.7.0-2.1.10-and-1.3.22-released`

4.2 EFM32 example applications:

- Updated all Micrium OS examples to use OS v5.4.0.

5 Removed Items

5.1 Gecko HAL & Driver:

- EMLIB
  - Removed support for PLFRCO in CMU.
- EMDRV
  - Removed support for PLFRCO in RTCDRV.
- Micrium
  - Removed uC/OS-III. New designs should use Micrium OS.
- mbedTLS
  - Removed TRNG entropy plugin for EFR32xG13 and EFR32xG14.

5.2 EFM32 example applications:

- Removed CrossWorks for ARM and Atollic TrueSTUDIO project files.
- Removed Micrium uC/OS-III based example applications.

6 Deprecated Items

6.1 Gecko HAL & Driver:

Complete deprecated API lists for each family can be found in online documentation. For example:

EFM32 Giant Gecko 11: `http://devtools.silabs.com/dl/documentation/doxygen/5.5/efm32gg11/html/deprecated.html`

EFR32 Mighty Gecko 12: `http://devtools.silabs.com/dl/documentation/doxygen/5.5/efr32mg12/html/deprecated.html`