32-bit MCU SDK 5.6.1.0

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This document contains a description of changes from version 5.5.0.0 to 5.6.0.0 of the 32-bit MCU Software Development Kit (SDK). The 32-bit MCU SDK is installed with Gecko SDK Suite 2.4.0 in Simplicity Studio for EFM32 and EZR32 products. For detailed changelog for the different components in the MCU SDK then see the various changelog files that are placed inside the MCU SDK install location.

1 Release Highlights

1.1 Gecko HAL & Driver:

- CMSIS-CORE library and device headers updated to v5.3.0

- Support for IAR v8.30.1

- Bugfixes and feature improvements

1.2 New EFM32 example applications:

- LTE-M (XBee3) ATT and Verizon EXP board example applications added for SLSTK3701A_EFM32GG11

1.3 Using This Release

32-bit MCU SDK 5.6.0.0 is installed with Gecko SDK Suite 2.4.0 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

1.3.1 Compatible Software

This version of the 32-bit MCU SDK is compatible with the following tool chains.

- IAR Embedded Workbench for ARM (IAR-EWARM) version 8.30.1

- GCC (The GNU Compiler Collection) version 7.2.1 is provided with Simplicity Studio

- Keil MDK V5.25 for ARM

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

  - EMLIB targets CMSIS version 5.3.0.
  - MSC write and erase functions return an error code when the MSC register interface is locked.
  - Added initialization of HYSTERESIS0 and HYSTERESIS1 in ACMP_Init() for series-1 devices.
  - Added function to route PRS output to GPIO pins for Series 0 and 1
  - Added missing argument to CRYPTO_InstructionSequenceExecute() inside the CRYPTO_EXECUTE_20 macro.
  - Added support for setting and getting the LETIMER top value using the new LETIMER_TopGet() and LETIMER_TopSet() functions.
  - Added new member to the LETIMER_Init_TypeDef struct called topValue. This value can be used to initialize the top value when using the LETIMER.
  - Added const to CMU_DPLLLock() argument and added new default initializer.
  - Added handling of CLKIN and HFRCODIV2 in CMU.
  - Added support for all 23 PRS channels for EFM32GG11.
  - Added full EBI support for EFM32GG11.

- EMDRV

  - NVM3: Improved storage area validation in nvm3_open(). Added new error code ECODE_NVM3_ERR_ERASE_COUNT_ERROR for nvm3_open().

2.2 EFM32 example applications:

- LTE-M (XBee3) ATT and Verizon EXP board example applications added for SLSTK3701A_EFM32GG11. The following example projects are added. See example description for more information.

  - Digi XBee Device Cloud example
  - Digi XBee SMS example
  - Digi XBee Time Server example
  - Digi XBee Time Server in Bypass Mode example

3 Fixed Issues

3.1 Gecko HAL & Driver:

- EMLIB

  - Disable WREN in the MSC_MassErase() function before returning.
  - Added missing call to CMU_OscillatorEnable() when HFXO AutoStart is used.
  - WDOGn_Init() will only wait for synchronization if the peripheral is already enabled.
  - When an instruction fetch results in a bus fault (e.g. from an external device), the bus fault is propagated to the core, but at the same time, the data may be cached. This means that next time this instruction is fetched, the core may get invalid data, but without any bus fault. ICache is now flushed at the event of a bus fault to work around this issue.
  - Fixed PCNTn_CNT_SIZE for multiple families.

- EMDRV
  - Fixed potential issue when calling RTCDRV_GetWallClockTicks32() and RTCDRV_GetWallClockTicks64() functions while interrupts are disabled and a counter overflow happens.
  - SPIDRV_Init() now sets the DATABITS field of the FRAME register correctly.
  - SPIDRV: Set ROUTELOC before ROUTEPEN to avoid glitching.
  - UARTDRV: RTS pin configuration DOUT value corrected (should be 1).
  - UARTDRV: Set ROUTELOC before ROUTEPEN to avoid glitching.
  - NVM3: Startup time and cache usage optimizations.
  - NVM3: Maximum object size is now 4096 bytes. Maximum object size was limited to 1900 bytes in the previous release.

3.2 EFM32 example applications:

- micriumos_webmic fixed for Keil-MDK and armgcc compilers.

- micrium_dynamic fixed for SLSTK3401A_EFM32PG.

- RTCDRV initialization bug in EZR32HG example applications fixed.

- Fixed issue that caused XBee projects to not build in Simplicity Studio when imported with Link Libraries and Copy Sources option.

4 Changed Items

4.1 Gecko HAL & Driver:

- ARM CMSIS-CORE library and device headers updated from v4.5.0 to v5.3.0.

4.2 EFM32 example applications:

- Updated all Micrium OS examples to use OS v5.5.0.

5 Removed Items

5.1 Gecko HAL & Driver:

- None

5.2 EFM32 example applications:

- None

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/5.6/efm32gg11/html/deprecated.html

EFR32 Mighty Gecko 12: http://devtools.silabs.com/dl/documentation/doxygen/5.6/efr32mg12/html/deprecated.html

7 Open Issues

7.1 Gecko HAL & Driver:

- NVM3

  - Running NVM3 with 3 pages on parts with 8k flash page size may cause repacks to be executed before they are required. This issue will be fixed in the next release.