MCUXpresso SOFTWARE DEVELOPMENT KIT FOR NXP's Arm® CORTEX®-M-BASED MCUs

The MCUXpresso Software Development Kit (SDK) is a pre-integrated and thoroughly tested collection of open-source drivers and middleware from NXP, complemented by other enabling software from its partners, for general-purpose, crossover and wireless Arm Cortex-M-based MCUs from NXP.

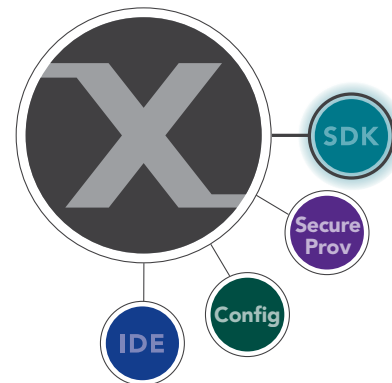## MCUXPRESSO SOFTWARE DEVELOPMENT KIT

NXP created the MCUXpresso SDK as a software framework and reference for application development for NXP's general-purpose, crossover and wireless enabled Arm Cortex-M-based MCUs. Users can download this SDK based on their selections of MCU, evaluation board and optional software components. Every MCUXpresso SDK download includes production-grade software with pre-integrated real-time operating systems (RTOSes), peripheral drivers, enabling software technologies (stacks and middleware), reference software and more.

NXP designed the production-ready MCUXpresso SDK with high-quality processes and robustly validated the product across multiple toolchains. NXP also developed all peripheral drivers in compliance with MISRA-C guidelines and analyzed them with Coverity® static analysis tools.

- Pre-integrated, production-grade software including peripheral drivers, connectivity stacks, middleware and RTOS

- Sample applications and usage examples for all drivers, stacks and middleware make getting started simpler

- Customizable downloads based on MCU, evaluation board, and component selections
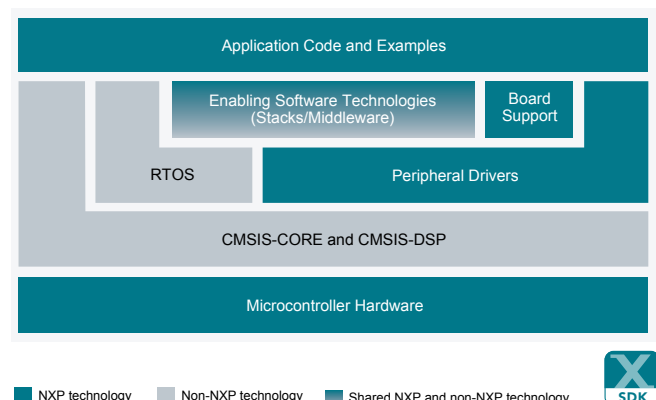
The MCUXpresso SDK is part of the cohesive suite of MCUXpresso Software and Tools and is inherently compatible with the MCUXpresso Integrated Development Environment (IDE), MCUXpresso Config Tools suite and the MCUXpresso Secure Provisioning Tool. Example projects are also supplied for Arm Keil®, IAR and GCC environments.

MCUXpresso Software and Tools

Designed to help ease and accelerate embedded system development and optimization, the MCUXpresso Software and Tools suite brings high-quality comprehensive enablement to NXP's general-purpose, crossover and wireless enabled Arm Cortex-M-based MCUs, allowing easy migration and scalability between families.

MCUXpresso SDK BLOCK DIAGRAM

FEATURES*

- Architecture
  - Arm CMSIS-CORE startup and device header files
  - CMSIS-DSP standard libraries
  - Open-source peripheral drivers that provide stateless, high-performance, easy-to-use APIs
  - Optional DMA support for communication peripherals
  - Optional distribution via GitHub Repository or CMSIS Device Family Packs
- Quality
  - Production-grade software
  - All drivers and startup code are MISRA-C:2012 compliant
  - Checked with Coverity static analysis tools
- Integrated RTOS kernel options***
  - FreeRTOS™
  - Azure RTOS ThreadX
  - RTOS-native driver wrappers
- Enabling software technologies (stacks and middleware) from NXP and its partners:
  - Graphics and HMI
    - SEGGER emWin
    - Embedded Wizard by TARA Systems**
    - Storyboard by Crank Software**
    - Azure RTOS GUIX
    - LVGL
    - TSI touch Library
  - Cloud connectivity
    - Amazon Web Services (IoT device SDK)
    - Microsoft® Azure® IoT
  - Motor control
    - PMSM, ACIM, BLDC motor control libraries
    - FreeMASTER embedded component

- Security
  - Arm Mbed™ TLS
  - Azure RTOS TLS 1.2/1.3
  - WolfSSL Embedded SSL/TLS
  - Trusted Firmware-M examples
  - Secure element host drivers
  - MCU bootloader
- Storage
  - FatFS, littleFS and Azure RTOS FileX and LevelX
  - SD/MMC stacks
  - DMA Manager
- NXP eIQ™ Machine Learning Software
  - TensorFlow Lite for Microcontrollers inference engine
  - Arm CMSIS-NN kernels
  - Glow and DeepViewRT inference engine
- Connectivity
  - EmSA CANopen and CANopen FD stacks**
  - USB Host, Device, and OTG
  - Azure RTOS USBX
  - Wi-Fi® support for NXP solutions
  - NFC/NTAG®
  - lwIP and Azure RTOS NetX Duo
  - Thread™, Bluetooth LE, 802.15.4 MAC
  - GenAVB/TSN AV Bridging/Time Sensitive Networking stack

- Miscellaneous
  - EEMV L1 that complies with EMV v4.3_Book_1 specification
  - IEC 60730 Class B Functional Safety Library
  - IoT sensing SDK (ISSDK)
  - USB Type C power delivery stack
- Audio and Voice
  - Essential Audio Processing library
  - Maestro and Cadence Xtensa Audiostreamer frameworks
  - Voice Intelligent Technology (VIT) local voice commands with VoiceSeeker audio front-end

SUPPORTED TOOLCHAINS:

- – MCUXpresso IDE
- – IAR Embedded Workbench®
- – Arm Keil® Microcontroller Development Kit
- – GNU Arm Embedded Toolchain compiler with Cmake
- • Software examples
  - – Demonstrate the usage of peripheral drivers, RTOS wrapper drivers, middleware and RTOSes

BUILD YOUR OWN SDK

The MCUXpresso SDK is conveniently packaged and delivered as a custom download based on user selections of MCU, evaluation board and optional software components. These custom packages are inherently smaller in size and make the MCUXpresso SDK much more manageable.

Download the MCUXpresso SDK (based on platform or device) directly from the MCUXpresso IDE, or simply visit https://mcuxpresso.nxp.com, and click on "Select Development Board" to get started.

GET STARTED

www.nxp.com/mcuxpresso/sdk

Join the MCUXpresso community:
https://community.nxp.com/
community/mcuxpresso/mcuxpresso-
sdk

Professional support and services:
www.nxp.com/services

*Software shown may not be available for all NXP MCUs.

**Evaluation version included. Separate license required from NXP partner for use in end products.

***Zephyr OS is available on several NXP General Purpose MCUs, but is delivered by the Zephyr Project. Please see https://nxp.com/zephyr for details.

www.nxp.com/mcuxpresso/SDK