



A comprehensive software enablement package designed to help simplify and accelerate application development

# MCUXpresso Software Development Kit for NXP's Arm® Cortex®-M-Based MCUs

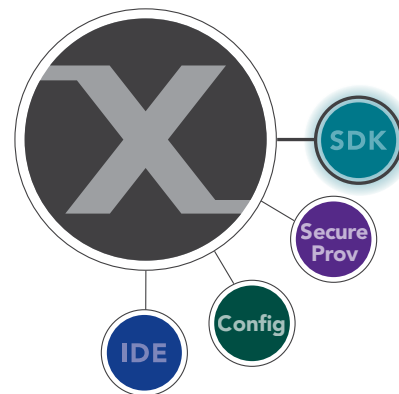
The MCUXpresso Software Development Kit (SDK) is a pre-integrated and thoroughly tested collection of open-source software components for general-purpose, crossover and Bluetooth®-enabled Arm Cortex-M-based MCUs from NXP.

## 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 Bluetooth-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 system (RTOS), 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 suite and is inherently compatible with the MCUXpresso Integrated development environment (IDE), MCUXpresso Config Tools suite and the MCUXpresso Secure Provisioning Tool.

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 Bluetooth-enabled Arm Cortex-M-based MCUs, allowing easy migration and scalability between families.



## 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 delivery as CMSIS Device Family Pack

### ► Quality

- Production-grade software
- All drivers and startup code are MISRA-C:2004 compliant
- Checked with Coverity static analysis tools

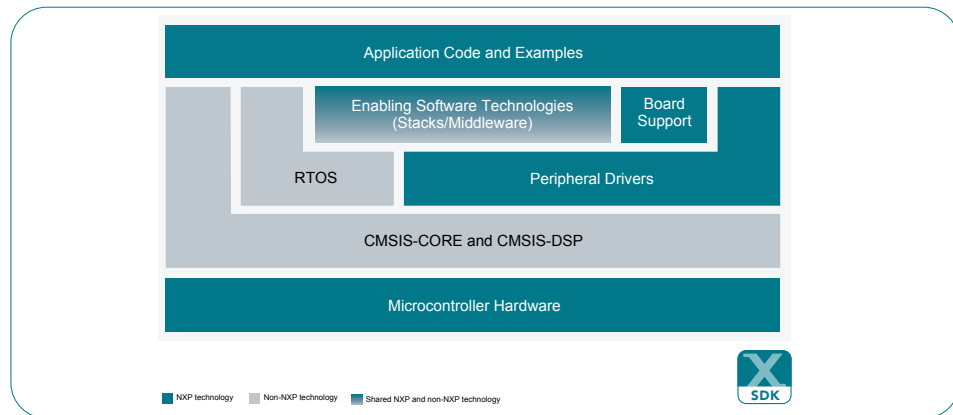
### ► Integrated RTOS kernel

- Amazon FreeRTOS™ 201908.00
- 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
  - LVGL
  - TSI touch Library
- Cloud connectivity
  - Amazon Web Services (IoT device SDK)
  - Microsoft® Azure® Cloud Connectivity SDK
  - Google Cloud™ IoT Core
- Motor control
  - PMSM, ACIM, BLDC motor control libraries
  - FreeMASTER embedded component

## MCUXpresso SDK BLOCK DIAGRAM



### – Security

- Arm Mbed™ TLS
- WolfSSL
- Secure element
- MCU Boot

### – Storage

- FatFS, littleFS
- SD/MMC stacks
- DMA Manager

### – NXP eIQ™ Machine Learning Software

- TensorFlow Lite inference engine
- Arm CMSIS-NN kernels
- Glow neural network compiler

### – Connectivity

- EmSA CANopen stacks
- USB Host, Device, and OTG
- Wi-Fi® support for Cypress, NXP, and Qualcomm® solutions
- NFC/NTAG®
- IwIP
- Thread™, Bluetooth LE, 802.15.4 MAC

### – Miscellaneous

- EEMV L1 that complies with EMV v4.3\_Book\_1 specification
- IEC 60730 Safety Library
- IoT sensing SDK (ISSDK)
- USB Type C power delivery stack

### ► Supported toolchains:

- MCUXpresso IDE

### – IAR Embedded Workbench®

- Arm Keil® Microcontroller Development Kit
- GNU Arm Embedded Toolchain compiler

### ► 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](http://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](http://www.nxp.com/services)

[www.nxp.com/MCUXpresso/SDK](http://www.nxp.com/MCUXpresso/SDK)

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