

MCSDKRN

Multicore SDK (MCSDK) Release Notes

Rev. 18 — 27 July 2023

Release notes

Document Information

Information	Content
Keywords	NXP Multicore Software Development Kit, MCSDK, Multicore, SDK
Abstract	This document is the release notes for NXP Multicore Software Development Kit (MCSDK).



1 Overview

These are the release notes for the NXP Multicore Software Development Kit (MCSDK) version 2.14.0. This software package contains components for efficient work with multicore devices as well as for the multiprocessor communication.

2 What is new

- eRPC: Makefiles update, GitHub PR #301.
- eRPC: Resolving warnings in Python, GitHub PR #325.
- eRPC: Python3.8 is not ready for usage of typing. Any type, GitHub PR #325.
- eRPC: Improved codec function to use reference instead of address, GitHub PR #324.
- eRPC: Fix NULL check for pending client creation, GitHub PR #341.
- eRPC: Replace sprintf with snprintf, GitHub PR #343.
- eRPC: Use MU_SendMsg blocking call in MU transport.
- eRPC: New LPSPI and LPI2C transport layers.
- eRPC: Freeing static objects, GitHub PR #353.
- eRPC: Fixed casting in deinit functions, GitHub PR #354.
- eRPC: Align LIBUSBSIO.GetNumPorts API use with libusbsio python module v. 2.1.11.
- erpcgen: Renamed temp variable to more generic one, GitHub PR #321.
- erpcgen: Add check that string read is not more than max length, GitHub PR #328.
- erpcgen: Move to g++ in pytest, GitHub PR #335.
- erpcgen: Use build=release for make, GitHub PR #334.
- erpcgen: Removed boost dependency, GitHub PR #346.
- erpcgen: Mingw support, GitHub PR #344.
- erpcgen: VS build update, GitHub PR #347.
- erpcgen: Modified name for common types macro scope, GitHub PR #337.
- erpcgen: Fixed memcpy for template, GitHub PR #352.
- eRPC,erpcgen: Change default build target to release + adding artefacts, GitHub PR #334.
- eRPC,erpcgen: Remove redundant includes, GitHub PR #338
- eRPC,erpcgen: Many minor code improvements, GitHub PR #323
- MCMgr: Avoid calling TX ISR callbacks when respective Messaging Unit Transmit Interrupt Enable flag is not set in the CR/TCR register.
- MCMgr: Messaging Unit RX and status registers are cleared after the initialization.
- RPMsg-Lite: Resolved issues in ThreadX env. layer implementation.
- RPMsg-Lite: Added aarch64 support.
- RPMsg-Lite: Increased the queue size to (2 * RL_BUFFER_COUNT) to cover zero copy cases.
- Supported evaluation boards (multicore examples):
 - LPCXpresso55S69
 - FRDM-K32L3A6
 - MIMXRT1170-EVK
 - MIMXRT1160-EVK
 - MIMXRT1170-EVKB
- Supported evaluation boards (multiprocessor examples):
 - FRDM-K22F
 - FRDM-K32L2B
 - MIMXRT685-EVK

- MIMXRT1060-EVK
- MIMXRT1170-EVK

3 Development tools

The Multicore SDK (MCSDK) version 2.14.0 was compiled and tested with these development tools:

- IAR Embedded Workbench for Arm version 9.40
- MDK-ARM Microcontroller Development Kit (Keil) version 5.38.a
- Makefiles support with GCC revision 12.2.Rel1 from Arm Embedded
- MCUXpresso IDE v11.8.0

4 Release contents

This table describes the release contents. Not all MCUXpresso SDK packages contain the whole set of these components.

Table 1. Release contents

Deliverable	Location
Multicore SDK location within the MCUXpresso SDK folder structure	<MCUXpressoSDK_install_dir>/middleware/multicore/...
Documentation	<MCUXpressoSDK_install_dir>/docs/multicore/...
Embedded Remote Procedure Call component	<MCSDK_dir>/erpc/...
Multicore Manager component	<MCSDK_dir>/mcmgr/...
RPMsg-Lite	<MCSDK_dir>/rpmmsg_lite/...
Multicore demo applications	<MCUXpressoSDK_install_dir>/boards/<board_name>/multicore_examples/...
Multiprocessor demo applications	<MCUXpressoSDK_install_dir>/boards/<board_name>/multiprocessor_examples/...

5 Multicore SDK release overview

Together, the Multicore SDK (MCSDK) and the MCUXpresso SDK (SDK) form a framework for the development of software for NXP multicore devices. The MCSDK release consists of the following elementary software components for multicore:

- Embedded Remote Procedure Call (eRPC)
- Multicore Manager (MCMGR) - included just in SDK for multicore devices
- Remote Processor Messaging - Lite (RPMsg-Lite) - included just in SDK for multicore devices

The MCSDK is also accompanied with documentation and several multicore and multiprocessor demo applications.

6 Demo applications

The multicore demo applications demonstrate the usage of the MCSDK software components on supported multicore development boards. The following multicore demo applications are located together with other MCUXpresso SDK examples in the <MCUXpressoSDK_install_dir>/boards/<board_name>/multicore_examples... subdirectories.

- erpc_matrix_multiply_mu
- erpc_matrix_multiply_mu_rtos
- erpc_matrix_multiply_rpmsg
- erpc_matrix_multiply_rpmsg_rtos
- erpc_two_way_rpc_rpmsg_rtos
- freertos_message_buffers
- hello_world
- multicore_manager
- rpmsg_lite_pingpong
- rpmsg_lite_pingpong_rtos
- rpmsg_lite_pingpong_tzm

The eRPC multicore component can be leveraged for inter-processor communication and remote procedure calls between SoCs / development boards. The following multiprocessor demo applications are located together with other MCUXpresso SDK examples in the `<MCUXpressoSDK_install_dir>/boards/<board_name>/multiprocessor_examples...` subdirectories.

- erpc_client_matrix_multiply_spi
- erpc_server_matrix_multiply_spi
- erpc_client_matrix_multiply_uart
- erpc_server_matrix_multiply_uart
- erpc_server_dac_adc
- erpc_remote_control

7 Revision history

This table summarizes revisions to this document.

Table 2. Revision history

Revision number	Date	Substantive changes
0	09/2015	Initial release
1	03/2016	Updated for the KSDK 2.0.0 and the MCSDK 1.1.0
2	08/2016	Updated for the MCSDK 2.0.0 and the LPCXpresso54114 support
3	09/2016	Updated for the MCSDK 2.1.0
4	03/2017	Updated for the MCSDK 2.2.0
5	06/2017	Updated for the MCSDK 2.2.1 and the LPCXpresso54102 support
7	11/2017	Updated for the MCSDK 2.3.0 and MCUXpresso SDK 2.3.0 release
8	05/2018	Updated for the MCSDK 2.4.0 and MCUXpresso SDK 2.4.0 release
9	12/2018	Updated for the MCSDK 2.5.0 and MCUXpresso SDK 2.5.0 release
10	06/2019	Updated for the MCSDK 2.6.0 and MCUXpresso SDK 2.6.0 release
11	12/2019	Updated for the MCSDK 2.7.0 and MCUXpresso SDK 2.7.0 release
12	07/2020	Updated for the MCSDK 2.8.0 and MCUXpresso SDK 2.8.0 release
13	11/2020	Updated for the MCSDK 2.9.0 and MCUXpresso SDK 2.9.0 release
14	01 June 2021	Updated for the MCSDK 2.10.0 and MCUXpresso SDK 2.10.0 release
15	12 November 2021	Updated for the MCSDK 2.11.0 and MCUXpresso SDK 2.11.0 release

Table 2. Revision history...continued

Revision number	Date	Substantive changes
16	30 June 2022	Updated for the MCSDK 2.12.0 and MCUXpresso SDK 2.12.0 release
17	19 December 2022	Updated for the MCSDK 2.13.0 and MCUXpresso SDK 2.13.0 release
18	27 July 2023	Updated for the MCSDK 2.14.0 and MCUXpresso SDK 2.14.0 release

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