MCSDKRN
Multicore SDK (MCSDK) Release Notes
Rev. 17 — 19 December 2022   **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 2.13.0. This software package contains components for efficient work with multicore devices as well as for the multiprocessor communication.

2 What is new

- eRPC: MUTransport adaptation to new supported SoCs.
- eRPC: Simplifying CI with installing dependencies using shell script, GitHub PR #267.
- eRPC: Using event for waiting for sock connection in TCP python server, formatting python code, C specific includes GitHub PR #269.
- eRPC: Endianness agnostic update, GitHub PR #276.
- eRPC: Assertion added for functions which are returning status on freeing memory, GitHub PR #277.
- eRPC: Fixed closing arbitrator server in unit tests, GitHub PR #293.
- eRPC: Makefile updated to reflect the correct header names, GitHub PR #295.
- eRPC: Compare value length to used length() in reading data from message buffer, GitHub PR #297.
- eRPC: Add TCP_NODELAY option to python, GitHub PR #298.
- eRPC: Replace EXPECT_TRUE with EXPECT_EQ in unit tests, GitHub PR #318.
- eRPC: Adapt rpmsg_lite based transports to changed rpmsg_lite_wait_for_link_up() API parameters.
- eRPC, erpcgen: Better distinguish which file can and cannot be linked by C linker, GitHub PR #266.
- eRPC, erpcgen: Stop checking if the pointer is NULL before sending it to the erpc_free function, GitHub PR #275.
- eRPC, erpcgen: Changed API to count with more interfaces, GitHub PR #304.
- erpcgen: Check before reading from the heap the buffer boundaries, GitHub PR #287.
- erpcgen: Several fixes for tests and CI, GitHub PR #289.
- erpcgen: Refactoring erpcgen code, GitHub PR #302.
- erpcgen: Fixed assigning const value to enum, GitHub PR #309.
- erpcgen: Enable runTesttest_enumErrorCode_allDirection, serialize enums as int32 instead of uint32.
- MCMgr: mcmgr_mu_internal.c code adaptation to new supported SoCs.
- RPMsg-Lite: improved debug check buffers implementation - instead of checking the pointer fits into shared memory check the presence in the VirtIO ring descriptors list.
- RPMsg-Lite: Timeout parameter added to rpmsg_lite_wait_for_link_up API function.
- RPMsg-Lite: VRING_SIZE is set based on several used buffers now (as calculated in vring_init) - updated for all platforms that are not communicating to Linux rpmsg counterpart.
- RPMsg-Lite: Fixed the wrong RL_VRING_OVERHEAD macro comment in the platform.h files.
- RPMsg-Lite: Misra corrections.

- Supported evaluation boards (multicore examples):
  - LPCXpresso55S69
  - FRDM-K32L3A6
  - MIMXRT1170-EVK

– MIMXRT1160-EVK
- Supported evaluation boards (multiprocessor examples):
  – FRDM-K22F
  – FRDM-K32L2B
  – MIMXRT685-EVK
  – MIMXRT1060-EVK
  – MIMXRT1170-EVK

3 Development tools

The Multicore SDK (MCSDK) version 2.13.0 was compiled and tested with these development tools:

- IAR Embedded Workbench for Arm version 9.30.1
- MDK-ARM Microcontroller Development Kit (Keil) version 5.37
- Makefiles support with GCC revision 10.3-2021.10 from Arm Embedded
- MCUXpresso IDE v11.7.0

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>/rpmsg_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 communicaton 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

Table 2. Revision history...*continued*

Revision number	Date	Substantive changes
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
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

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Release notes

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