MCSDKRN

Multicore SDK (MCSDK) Release Notes

Rev. 13 — 24 November 2020

Release Notes

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1 Overview

These are the release notes for the NXP Multicore Software Development Kit (MCSDK) version 2.9.0. This software package contains components for efficient work with multicore devices as well as for the multiprocessor communication.

2 What is new

- eRPC: Support win32 thread, GitHub PR #108.
- eRPC: Add mbed support for malloc() and free(), GitHub PR #92.
- eRPC: Update makefile.
- eRPC: Fixed warnings and error with using MessageLoggers, GitHub PR #127.
- eRPC: Extend error msg for python server service handle function, GitHub PR #132.
- eRPC: Update CMSIS UART transport layer to avoid busy loops in rtos environments, introduce semaphores.
- eRPC: Introduced pre and post callbacks for eRPC call, GitHub PR #131.
- eRPC: Introduced new USB CDC transport.
- eRPC: Introduced new Linux spidev-based transport.
- eRPC: SPI transport update to allow usage without handshaking GPIO.
- eRPC: Native _WIN32 erpc serial transport and threading.
- eRPC: Arbitrator deadlock fix, TCP transport updated, TCP setup functions introduced, GitHub PR #121.
- eRPC: Update of matrix_multiply.py example: Add --serial and --baud argument, GitHub PR #137.
- eRPC: Added formatting extension for VSC, GitHub PR #134.
- eRPC: Update of .clang-format, GitHub PR #140.
- eRPC: Update of erpc_framed_transport.cpp: return error if received message has zero length, GitHub PR #141.
- eRPC, erpcgen: Fixed error messages produced by -Wall -Wextra -Wshadow -pedantic-errors compiler flags, GitHub PR #136, #139.
- eRPC, erpcgen: Core re-formatted using Clang version 10.
- erpcgen: Enable deallocation in server shim code when callback/function pointer used as out parameter in IDL.
- erpcgen: Removed '$' character from generated symbol name in '_$union' suffix, GitHub PR #103.
- erpcgen: Resolved mismatch between C++ and Python for callback index type, GitHub PR #111.
- erpcgen: Python generator improvements, GitHub PR #100, #118.
- erpcgen: Fixed error messages produced by -Wall -Wextra -Wshadow -pedantic-errors compiler flags, GitHub PR #136.
- erpcgen: Introduce ustring type for unsigned char and force cast to char*, GitHub PR #125.

- RPMsg-Lite: Introduced RL_ALLOW_CONSUMED_BUFFERS_NOTIFICATION config option to allow opposite side notification sending each time received buffers are consumed and put into the queue of available buffers.
- RPMsg-Lite: Added environment layers for Threadx.
- Supported evaluation boards (multicore examples):
  - LPCXpresso54114
  - LPCXpresso55S69
  - FRDM-K32L3A6
  - MIMXRT1170-EVK
- Supported evaluation boards (multiprocessor examples):
  - FRDM-K22F
  - FRDM-K28FA
  - FRDM-K64F
  - FRDM-K66F
  - FRDM-KL27Z
  - FRDM-K32L2B

3 Development tools

The Multicore SDK (MCSDK) version 2.9.0 was compiled and tested with these development tools:

- IAR Embedded Workbench for Arm® version 8.50.6
- MDK-ARM Microcontroller Development Kit (Keil)® version 5.33
- Makefiles support with GCC revision 9-2020q2-update from Arm Embedded
- MCUXpresso IDE v11.3.0

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
- low_power
- 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
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

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