**ABSTRACT**

With newly designed NXP multicore platforms there is a need for software components that would ensure efficient communication between individual cores and rational usage of the multicore computational power. The software for multicore plays a vital role and can essentially influence the overall performance of the multicore system. Several multicore components have been developed by NXP:

- Embedded Remote Procedure Call (eRPC)
- Remote Processor Messaging Lite (RPMsg-Lite)
- Multicore Manager (MCMGR)

**RPMsg-Lite**

RPMsg-Lite is a lightweight implementation of the RPMsg protocol. The RPMsg protocol defines a standardised binary interface used to communicate between multiple cores in a heterogeneous multicore system. Compared to the OpenAMP implementation, RPMsg-Lite offers a code size reduction, API simplification, and improved modularity. Main RPMsg protocol features:

- Shared memory interprocessor communication
- Virtio-based messaging bus
- Application-defined messages sent between endpoints
- Portable to different environments/platforms
- RPMsg protocol available in upstream Linux OS

**PLATFORMS**

**LPCXpresso5411x Board**

- Cortex-M4 to Cortex-M0+
- Microcontroller platform:
  - 256kB flash, 192kB SRAM
- Components:
  - eRPC, RPMsg-Lite

**IMX6SX SABRE SDB Board**

- Cortex-A9 to Cortex-M4
- CM4 can run from on chip SRAM
- CA9 running Yocto Linux
- Components:
  - eRPC, RPMsg-Lite, RPMsg sysfs

**RESULTS & BENEFITS**

The solution can serve as a base enablement for virtualization of services provided and consumed by different cores in multi-core and multi-processor applications. Secondary core managed by the MSDK can run following types of applications:

- Communication stacks (USB, Thread, BLE, Zigbee)
- Sensor aggregation/fusion apps.
- Encryption algorithms
- Virtual peripherals

**REFERENCES**

- eRPC on GitHub: https://github.com/EmbeddedRPC/erpc
- RPMsg-Lite on GitHub: https://github.com/NXPmicro/rpmsg-lite
- OpenAMP on GitHub: https://github.com/OpenAMP
- Kinetis SDK at NXP Kinetics Expert webpage: https://kex.nxp.com

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