



30-Mar-2017

NXP Digital Networking is pleased to announce the release of QorIQ Linux SDK v2.0-1703 supporting our QorIQ family of processors. This release is one of a series of releases based on SDK v2.0 that include software fixes, chip errata workarounds, new processors / board support and minor features. Because this release is based on SDK v2.0, the same base 4.1 LTS Linux kernel is utilized. Please note that SDK v2.0-1703 is incremental to and requires the installation of SDK v2.0.

See the “What’s New” below for more details on this release and previous releases. See download instructions in the “How to obtain this release” section below.

What's New in SDK V2.0-1703

Highlights

- Integrates off-train release for LS2088A BSP v0.3
- Integrates off-train release for LS1012A BSP v0.5
- Removal of LS2080A and LS2085A-RDB
- MC 10.1.2 update
- Added DPDK support for DPAA2 platforms (LS2088A)
- Integrates Open Data Plane (ODP) for LS2088A
- Includes several software fixes. See [Fixed, Open, and Closed Issues](#) section which has a list of all fixed issues
- Includes additional workarounds for Chip Errata: A-009241, A-009942, A-010554, A-010635, A-010812

See list of changes in below

Processor and Board Support

- LS2088A r1.0 and Rev.D RDB, Rev. F RDB
- Removal of LS2080A and LS2085A-RDB
- LS1012A RDB revC and FRDM revD

Linux Kernel Core, Virtualization

- LS2088A: libvirt, LXC, docker engine

Linux Kernel Drivers



- LS2088A: DUART, DDR4, I2C, PCIe, SATA, USB, SD, MMC, NOR, NAND flash, Networking support, SEC
- LS1012A: 2.5G SGMII, Checksum offload to PFE hardware
- CPU Frequency on LS1012A
- DPAA2 ethernet: socket busy poll, IEEE802.3x flow control, tx congestion management
- eMMC HS200 and SD UHS-I on LS1012A and LS1046A
- PFE driver: Checksum offload to PFE hardware

Data Plane Development Kit (DPDK)

- DPDK v16.07.2 Support with Stable patches from Upstream
- DPAA2 support for DPDK
- Various performance optimization and bug fixes
- Features supported:
 - Fragmentation and Re-assembly
 - RX Queue Tail drop for performance improvement at high traffic rates
 - DPAA2 now supports Flow Control (Pause Frame)
 - DPAA1 now supports Multicast address filtering

Virtualization - OVS-DPDK

- DPAA2 support enabled in OVS-DPDK
- DPDK working in Virtual Machine on DPAA2 and DPAA1

Open Data Plane (ODP)

- Supported on LS2088A
- Supports ODP API v1.11
- Following Applications are supported:
 - ODP generator sample application
 - ODP pktio sample application
 - ODP ipsec transport and tunnel sample applications
 - ODP packet classify sample application
 - ODP timer sample application
 - ODP LPM IP Forwarding sample application
 - ODP Traffic Manager sample application
 - ODP OpenFastPath Applications (FPM & FPM_BURSTMODE)

U-Boot Boot Loader



- LS2088A: DUART, DDR4, I2C, PCIe, SATA, USB, SD, MMC, NOR, NAND flash, Networking support, Boot from NOR flash
- NAND secure boot on LS1043A
- SD secure boot on LS1043A and LS1046A

Other Tools and Utilities

- LS2088A: Primary Protected Application (PPA) firmware
- MC 10.1.2 updates
- Restool: DPNI configuration support for Order Restoration, Debug Configuration, Loopback Option
- Benchmark: power management benchmark on LS1046A

What's New in SDK v2.0-1701

Highlights

- Kernel 4.1.35 upgrade
- Integrates off-train releases for LS1012A
- DPDK on LS1043A, LS1046A and LS2080A
- Real-time support recovery on B4860, LS1012A and P4080
- PSCI and sleep 32-bit kernel on LS1012A, LS1043A and LS1046A
- Includes several software fixes. See [Fixed, Open, and Closed Issues](#) on page 58 section which has a list of all fixed issues
- Includes additional workarounds for Chip Errata: A-010284, A-010150, A-008975
- See list of changes in below

Processor and Board Support

- LS1012A r1.0 and RDB, Freedom
- LS1046A r1.0: upgrading platform and fman frequency to 700MHz and 800MHz, adding 0.9v part support, adding core/platform/fman 1.2GHz/400MHz/600MHz
- LS1021A default core frequency 1.2GHz upgrade

Linux Kernel Core, Virtualization

- Kernel 4.1.35 upgrade



- QEMU 2.6 upgrade

Linux Kernel Drivers

- LS1012A: Crypto driver supporting SEC 5 (CAAM), DDR, DUART, DSPI, eSDHC, I2C, PCIe RC, PFE Ethernet (PacketRx/Tx), PHY support: RGMII & SGMII, Power management, QSPI, SAI/I2S, SATA, UART, USB 2/3 mass storage, Watchdog
- LS1046A: Thermal monitor
- PSCI and sleep 32-bit kernel on LS1012A, LS1043A and LS1046A
- Real-time support
- User space IO

Data Plane Development Kit (DPDK)

- DPDK v16.07 API Support
- Following DPDK Applications have been verified
 - l2fwd
 - l3fwd
 - l2fwd_crypto
 - ipsecgateway
- Virtualization - OVS-DPDK
 - OVS-DPDK working with vhost-virtio interfaces
 - DPDK working in Virtual Machine

U-Boot Boot Loader

- Enable CONFIG_PARTITION_UUIDS, CONFIG_EFI_PARTITION, CONFIG_CMD_GPT
- LS1012A: Non-secure boot, Secure Boot, Clock, CPLD, DDR4, DSPI, eSDHC, I2C, Generic Timers, PCIe, Primary, Protected Application (PPA) firmware integration, QSPI, SATA, UART, USB
- Loading 32-bit kernel for ARMv8 with PSCI and PPA enabled

Other Tools and Utilities

- LS1012A: Primary Protected Application (PPA) firmware

What's New in SDK v2.0-1611

Highlights



- U-Boot 2016.09 upgrade
- Integrates off-train releases for LS1046A r1.0 and LS1043A r1.1
- 32-bit kernel on LS1043A and LS1046A (Note: no 32-bit kernel on LS2080, no 32-bit USDPAA)
- Includes additional workarounds for Chip Errata: A-010539, A-007273, A-008975
- See list of changes in SDK v2.0 below

Processor and Board Support

- LS1046A and LS1046A-RDB, adding core frequency 1.8GHz support
- LS1043A r1.1
- LS1021A default core frequency 1.2GHz upgrade

Linux Kernel Core, Virtualization

- ARM A72 (AARCH64), Little Endian (default)
- ARM A72 32-bit effective kernel addressing
- ARM A72 64-bit effective addressing

Linux Kernel Drivers

- LS1046A: CEETM, Crypto via SEC 5, DSPI, DPAA Networking, eDMA, eSDHC, Flextimer, GIC-400, I2C, IEEE1588, IFC NOR & NAND, MDIO, PCIe RC & Endpoint, PCIe MSI, Power Management: CPU Idle, Device Frequency Scaling (DFS), CPU Hotplug (LPM20), Thermal Monitor (TMU), QDMA, SATA, SMMU, USB 2.0 & 3.0, UART, Watchdog timer
- LS1043A: CPU Hotplug (LPM20), PCIe MSI

User Space Datapath Acceleration Architecture (USDPAA) and Reference Applications

- LS1046A: Base and DPAA drivers, USDPAA Applications: Hello Reflector, PPAC Reflector, RC IPFWD, LPM IPFWD, IPSecFwd, Simple Proto, Simple Crypto

U-Boot Boot Loader

- U-Boot 2016.09



- LS1046A: Non-secure boot, Secure Boot, Clock, CPLD, DDR4, DSPI, eSDHC, FMan IM, GIC-400, I2C, IFC NOR & NAND, MDIO, OCRAM, PCIe, Primary Protected Application (PPA) firmware integration, QSPI, SATA, UART, USB

Other Tools and Utilities

- Primary Protected Application (PPA) firmware [LS1046A, LS1043A] - Hotplug (LPM20), System Reset

What's New in SDK v2.0-1609

Highlights

- Updated to Linux kernel 4.1.30 which includes several fixes from the community
- Includes several software fixes. See Fixed, Open and Closed Issues section in the SDK user documentation for a list of all fixed issues
- Includes additional workarounds for Chip Errata: A-009942, A-007728, A-010240, A-007728, A-008822
- See list of changes in SDK v2.0 below

What's New in SDK v2.0

Highlights

- Linux 4.1 Long-Term Support (LTS) kernel upgrade
- Yocto 2.0 (jethro) upgrade
- U-Boot 2016.01 upgrade
- Integrates off-train releases for LS1043A and LS2080A
- Continued support for QorIQ ARM and Power Architecture processors in a common source base
- See full list of features and changes below

Processor and Board Support

- LS1043A and LS1043A-RDB
- LS2080A and LS2085A-RDB
- P1010, P1021/2/3/4/5, P2020/10, and BSC9131/2 no longer supported. Please see prior SDK releases and support in upstream repositories



Yocto and Toolchain

- Yocto/Poky 2.0 "jethro"
- power: gcc-4.9.2, glibc-2.20, binutils-2.25, gdb-7.10.1
- arm: gcc-linaro-4.9.3-r2015.03, glibc-linaro-2.20--r2014.11, binutils-linaro-2.25-r2015.01, gdb-7.10.1

Linux Kernel Core, Virtualization

- Linux kernel 4.1.8
- ARMv8: AARCH64, 64-bit effective addressing, Little Endian (default), Multicore SMP, Huge Pages (hugetlbfs), Kernel-based Virtual Machine (KVM), Libvirt, Linux Containers (LXC), Docker Engine

Linux Kernel Drivers

- LS1043A: CEETM, Crypto via SEC 5, DSPI, DPAA Networking, eDMA, eSDHC, Flextimer, GIC-400, I2C, IEEE1588, IFC NOR & NAND, MDIO, PCIE, Power Management: CPU Idle, Device Frequency Scaling (DFS), CPU Hotplug (PW15), Thermal Monitor (TMU), QDMA, QE TDM, SATA, SMMU, USB 2.0 & 3.0, UART, Watchdog timer
- LS2080A: Crypto via SEC6, DCE, Datapath I/O services (DPIO), DPAA2: MC Bus, Ethernet, Edge Virtual Bridge (EVB), DSPI, DUART, GIC-500, I2C, IFC NOR & NAND, PCIE, Power Management: Device Frequency Scaling (DFS), Thermal Monitor (TMU), PHYs: RGMII, SGMII, XFI, Quad-SPI, Real-Time Clock, SATA, SMMU, USB, VFIO, Watchdog timer
- IEEE1588 PTPd support on LS1021A

Open Data Plane

- v16.05 release (available separately)
- Conforms to ODP 1.4
- Open source APIs for networking data plane
- ODP application support including pktio, l2/l3forwarding, ipsec, classifier, timer

User Space Datapath Acceleration Architecture (USDPA) and Reference Applications



- LS1043A: Base and DPAA drivers, USDPAA Applications: Hello Reflector, PPAC Reflector, RC IPFWD, LPM IPFWD, IPSecFwd, Simple Proto, Simple Crypto
- CAPWAP no longer supported

U-Boot Boot Loader

- NOTE: FLASH MAP CHANGE FOR SDK 1.6 AND LATER
- U-Boot 2016.01
- ARMv8 core
- LS1043A: Non-secure boot, Secure Boot, Clock, CPLD, DDR3L, DDR4, DSPI, eSDHC, FMan IM, GIC-400, I2C, IFC NOR & NAND, MDIO, OCRAM, PCIe, Primary Protected Application (PPA) firmware integration, SATA, UART
- LS2080A: LS2040A personality, Non-secure boot, Secure Boot, DUART, DDR3, DPAA2 networking, DSPI, GIC-500, I2C, IFC NOR & NAND, Boot from NOR, MC boot, MDIO, PCIE, SATA, USB 2 & 3
- Voltage ID on T4240RDB

Other Tools and Utilities

- Primary Protected Application (PPA) firmware [LS1043A] - Hotplug (PW15), System Reset
- Management Complex (MC) Firmware version 9.0.5 – binary only, supporting DPAA2 resource containers and network objects, Resource Manager and Link Manager
- DPAA2 resource container and object management tool (RESTOOL)
- Convenience scripts to create and manage common objects like network interfaces. These scripts are packaged in ls2scripts tarball.

Licensing

The majority of the software included in the QorIQ SDK is licensed under a form of open source license (e.g. GPL, BSD). Some software is licensed under the Freescale/NXP End User License.

How to obtain this release

QorIQ SDK v2.0-1703 can be found in the same location as SDK 2.0. In the meantime, please use the attached transcendent information to get the image. SDK 2.0 information is provided below.



QorIQ SDK v2.0 can be downloaded as ISO files (see details below). Alternatively, the SDK source repositories can be accessed using the external git server (see link below). Lastly, SDK documentation is available on the external web site (see link below).

The SDK consists of the following ISOs:

- Source ISO - contains SDK source code, Yocto recipes, and SDK user documentation.
- Yocto Cache Binary ISOs – contains pre-built Yocto cache binary files that will accelerate building the SDK. There is a 32-bit Cache Binary ISO for ARM AARCH64 (Cortex-A53 & A57), Cortex-A7, 1 for each Power Architecture core and 64-bit Cache Binary ISOs for e5500 and e6500 cores.
- Images – contains the flash and hard drive images for each supported platform.
- Refer to the full list of all the ISOs for SDK v2.0:
 - o QorIQ Linux SDK v2.0 Yocto Source ISO
 - o QorIQ Linux SDK v2.0 AARCH64 Images ISO
 - o QorIQ Linux SDK v2.0 AARCH64 Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 Cortex-A7 Images ISO
 - o QorIQ Linux SDK v2.0 Cortex-A7 Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 e500v2 Images ISO
 - o QorIQ Linux SDK v2.0 e500v2 Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 e500mc Images ISO
 - o QorIQ Linux SDK v2.0 e500mc Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 e5500 Images ISO
 - o QorIQ Linux SDK v2.0 e5500 Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 e5500 64-bit Images ISO
 - o QorIQ Linux SDK v2.0 e5500 64-bit Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 e6500 Images ISO
 - o QorIQ Linux SDK v2.0 e6500 Yocto Cache Binary ISO
 - o QorIQ Linux SDK v2.0 e6500 64-bit Images ISO
 - o QorIQ Linux SDK v2.0 e6500 64-bit Yocto Cache Binary ISO

QorIQ SDK ISOs can be downloaded from this location:

<http://www.nxp.com/products/software-and-tools/run-time-software/linux-sdk/linux-sdk-for-qorIQ-processors:SDKLINUX>

QorIQ SDK source repositories can be accessed from the external git server located here: <http://git.freescale.com/git/cgit.cgi/ppc/sdk>



QorIQ SDK User documentation can be located online here:

https://freescale.sdlproducts.com/LiveContent/web/pub.xql?c=t&action=home&pub=QorIQ_SDK&lang=en-US

Contact / Support:

Email Support: support@nxp.com

Web Support: www.nxp.com/support