

Multicore Software Development Kit

Release Notes

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Contents

1	Overview	1
2	Licensing.....	1
3	Documentation	1
4	Platform and Device Support.....	2
5	Release Images.....	2
6	Issues List.....	2
7	Technical Support and Product Updates	3
8	IS NOT	3
9	Releases	4
9.1	03.01.00.03.....	4
	9.1.1 New features and fixes.....	6
	9.1.2 Known Issues	10

MCSDK Release 3.1.0

1 Overview

This document is the Release Notes for [Release 3.1.0](#) of the Multicore Software Development Kit (MCSDK) for Linux and BIOS operating systems. This software release gives developers the ability to develop software for KeyStone II devices. Please refer to the *Getting Started Guide* chapter in the *User Guide* on how to install the MCSDK packages.

2 Licensing

Please refer to the software manifest, which outlines the licensing status for all packages included in this release.

3 Documentation

- [MCSDK 3.x User Guide](#): Provides information on features, functions, delivery package and, compile tools for the MCSDK release. This also provides detailed information regarding software elements and software infrastructure to allow developers to start creating applications. *(NOTE: The latest version of the User Guide can be found on the online link as specified and a snapshot is provided in PDF format in the release at [INSTALL-DIR]/mcsdk_bios_<ver>/docs.)*
 - [Getting Started Guide](#): This chapter in the User's Guide provides information to run demonstrations out of box. It also contains information to update flash images on EVM and install software.
 - [Migration Guide](#): This chapter in the User's Guide provides information for migrating software from major MCSDK releases.
- **MCSDK Software Manifest**: Provides license information on software included in the MCSDK release. This document can be found in the release at [INSTALL-DIR]/mcsdk_bios_<ver>/docs.
- **EVM Quick Start Guide**: Provides information on hardware setup and running the demonstration application that is loaded on flash. This document is provided as part of the EVM kit.

4 Platform and Device Support

The device and platforms supported with this release include:

Platform	Supported Devices	Supported EVM
[K2H]	TCI6636K2H , 66AK2H06 , 66AK2H12	XTCIEVMK2X, EVMK2H
[K2K]	TCI6638K2K	XTCIEVMK2X
[K2L]	TCI6630K2L	TCIEVMK2L
[K2E]	66AK2E05 , 66AK2E02 , AM5K2E02 , AM5K2E04	EVMK2E

5 Release Images

The release images are based on

- Supported platform (K2HK, K2L, or K2E)
- Real-time or non-real-time Linux kernel
- Type of image (UBI FS for NAND, Server filesystem, minimal Console filesystem)

UBI images:

- k2hk-evm-ubifs.ubi
- k2l-evm-ubifs.ubi
- k2e-evm-ubifs.ubi
- k2hk-evm-ubifs-rt.ubi
- k2l-evm-ubifs-rt.ubi
- k2e-evm-ubifs-rt.ubi

Server rootfs images:

- tisdk-rootfs-k2hk-evm.tar.gz
- tisdk-rootfs-k2l-evm.tar.gz
- tisdk-rootfs-k2e-evm.tar.gz
- tisdk-rootfs-rt-k2hk-evm.tar.gz
- tisdk-rootfs-rt-k2l-evm.tar.gz
- tisdk-rootfs-rt-k2e-evm.tar.gz

(Minimal) console images:

- arago-console-image-k2hk-evm.tar.gz
- arago-console-image-k2l-evm.tar.gz
- arago-console-image-k2e-evm.tar.gz
- arago-console-image-rt-k2hk-evm.tar.gz
- arago-console-image-rt-k2l-evm.tar.gz
- arago-console-image-rt-k2e-evm.tar.gz

6 Issues List

The list of issues can be found online using this [link](#). The snapshot of this list at the time of list can be found in the Releases section below. For the latest version, use the online list.

7 Technical Support and Product Updates

For technical discussions and issues, please visit:

- [KeyStone Multicore forum](#)
- [TI-RTOS forum](#)
- [Linux Embedded Software forum](#)
- [Code Composer Studio forum](#)
- [TI C/C++ Compiler forum](#)
- [Embedded Processors wiki](#)

For local support in China, please visit

- [China Support forum](#)

For product updates, see the [MCSDK Download](#) chapter of the online User Guide.

8 IS NOT

- Support for BIOS5 or older releases
- Support for CCS 4.x or older releases
- Support for platforms not listed in Section 4
- DSP image format other than ELF (e.g., COFF)
- Big endian DSP with ARM Little endian configuration
- Simulator is tested at the CSL/LLD level only. Higher level features (e.g IPC) may not work with the simulator.

9 Releases

9.1 03.01.00.03

This is a R3.1.0 production release of the Multicore SDK. The baseline for this release is R3.0.4.

Items marked in **blue** are modifications from R3.0.4.

Component	Description	Version	Installer
ARM Target Software			
Linux Kernel	ARM high-level operating system, network stack	3.10 LTS (TAGS: K2_LINUX_03.10.10_14.07, K2_RT_LINUX_03.10.10_14.07)	MCSDK
U-boot	ARM boot loader	2013.01 (TAG: K2_UBOOT_2013_01_14.07)	MCSDK
Boot Monitor	Boot Monitor software provides secure privilege level execution service for Linux kernel code through SMC calls	K2_BM_14.07	MCSDK
MPM	Multi-processor manager for loading and managing DSP cores, including fault management	2.0.1.3	MCSDK
MPM Transport	Multi-proc-Manager Transport layer	1.0.5.2	MCSDK
Transport Net Lib	Transport Network Library including: HPLIB (High Performance Library) NetAPI (Network API)	1.1.0.1	MCSDK
IPSecMgr	IPSec Manager	1.1.0.2	MCSDK
Matrix Apps	Matrix launcher used for out of box demonstrations	1.0.0.2	MCSDK
Trace Framework	Trace framework for collecting and distributing log/event messages (ARM portion)	1.1.1.4A	MCSDK
User-Mode LLDs	Subset of LLD that work on ARM user-space	See below	MCSDK
CMEM	Contiguous memory allocate for ARM user-space	4.0.3.14	MCSDK
UIO	User-space I/O driver for on-chip modules. This driver provides support of mmap interface, interrupt handling and powering up/down of on-chip modules from user space.	1.0.1.0	MCSDK
DSP Target Software			
SYS/BIOS	DSP real-time operating system	6.37.3.30	MCSDK

NDK	DSP network stack	2.22.2.16	MCSDK
IPC	DSP inter-process communication	3.22.2.11	MCSDK
cToolsLib	Trace debug library	1.1.0.0	MCSDK
UIA	Unified instrumentation architecture	1.3.2.10	MCSDK
Image Proc	Image processing demo	1.0.0.1	MCSDK
DSP Optimized Libraries			
DSPLIB	Generic DSP functions	3.2.0.1	MCSDK
MATHLIB	Math functions	3.1.0.0	MCSDK
IMGLIB	Image functions	3.1.1.0	MCSDK
DSP Platform Development Kit			
CSL	Chip support library	2.1.0.5	MCSDK
AIF2 LLD	Antenna Interface LLD (not in K2L)	1.1.0.3	MCSDK
BCP LLD	Bit Rate Coprocessor LLD	2.1.0.2	MCSDK
CPPI LLD	Packet DMA LLD	2.1.0.6	MCSDK
EDMA3 LLD	Enhanced Direct Memory LLD	2.11.13.17	MCSDK
FFTC LLD	FFT Accelerator Coprocessor LLD	2.2.0.3B	MCSDK
HYPLNK LLD	HyperLink LLD	2.1.0.1	MCSDK
PA LLD	Packet Accelerator LLD	3.0.0.10	MCSDK
PCIe LLD	Peripheral Component Interconnect Express	2.1.0.1	MCSDK
QMSS LLD	Queue Manager LLD	2.1.0.5	MCSDK
RM LLD	Resource Manager LLD	2.1.0.5	MCSDK
SA LLD	Security Accelerator LLD	3.0.0.6	MCSDK
SRIO LLD	Serial Rapid IO LLD	2.0.0.10	MCSDK
TCP3D LLD	Turbo Coprocessor Decoder LLD	2.1.0.1	MCSDK
MMAP LLD	MPAX Map LLD	2.0.0.3	MCSDK
TSIP LLD	Telephony serial interface (K2E only)	1.0.0.0	MCSDK
IQN2 LLD	High speed antenna interface (K2L only)	1.0.0.1	MCSDK
DFE LLD	Digital Front End LLD (K2L only)	1.0.0.1	MCSDK
Platform Library	DSP EVM drivers and SOC initialization	[MCSDK version]	MCSDK
NWAL	Network adaptation layer provides high level driver functionality abstracting NetCP LLDs PA and SA	2.1.0.2	MCSDK
Trace Framework	Trace framework for collecting and distributing log/event messages (DSP portion)	1.1.1.4A	MCSDK
Fault Management	Library for core dump, watchdog timer	1.0.1.1	MCSDK
PKTLIB	Packet Library	2.1.0.3	MCSDK

Host Development Tools			
Program_evm	Utility to update EVM flash with software images	[MCSDK version]	MCSDK
Yocto-Arago	ARM software distribution	1.4	Link
Linux devkit	Development kit that is independent of Arago	N/A	MCSDK
CCS	Code Composer Studio integrated development environment	5.5.0	Link
Linaro Toolchain	ARM toolchain	2013.03 (GCC 4.7)	Link
CodeGen	DSP compiler	7.4.4	CCS
CG_XML	Package of Perl scripts used to process the XML files that come from the TI code generation tools. Use it to do things like build a spreadsheet that details the size of all the sections, or figure out how much of the memory map is taken up by specific libraries.	2.30	MCSDK
XDCTools	DSP RTSC packaging and build tools	3.25.6.96	MCSDK
Simulator	Simulator for K2L, K2E	0.9.0	CCS
MCSDK Apps	MCSDK applications (udma, DSP core parser, etc.)	[MCSDK version]	MCSDK

9.1.1 New features and fixes

ID	Description
New Feature	Added support for K2E and K2L devices
SDOCM00104163	TAC2 CSL register layer file cslr_tac2_cfg.h has error
SDOCM00105040	Portions of MCSDK 3.0.x User Guide still in draft state
SDOCM00105864	UDMA unit test fails with rt-kernel and rt-nfs combination.
SDOCM00105884	cToolsLib: Warning messages when compiling examples and demo
SDOCM00106007	UDMA unit test fails almost 20% of time if run multiple times with regular kernel
SDOCM00106427	Needs to add a script to build Uboot image for NAND boot in the MCSDK 3.0.4 builds
SDOCM00106564	Linux kernel does not boot when manually load kernel/rootfs images to DDR via CCS
SDOCM00107129	Linux Kernel for Lamarr should initialize external linking ram of 1MB to OSR
SDOCM00107152	a libnl-xfrm compatible with libnl-3.2.24
SDOCM00107359	[Wireless LLD] Need to build and test the wireless LLD to enable the call stack trace
SDOCM00107473	Fix needed for disparity between how U-Boot writes to NAND and boot ROM reads NAND
SDOCM00107829	Add L1D memory segment in MPM configuration file
SDOCM00107943	NAND OOB mtdtest failing
SDOCM00107974	Add support for hmac-sha2-256 in netapi ipsecmgr daemon
SDOCM00108066	add RM to pa unit test on dsp

SDOCM00108171	rmserver crash after loading dsp0 with MPM for rmK2HArmv7LinuxDspClientTestProject test
SDOCM00108172	rmserver crash when testing rmLinuxClientTest
SDOCM00108212	PA unit tests should have the "All tests have passed" message when tests have passed to assure the proper automation result
SDOCM00108231	IPSEC Inflow: stop offload only works for one channel. Error (-8) is returned for second channel
SDOCM00108256	traceframework and dat do not compile on more strict rules
SDOCM00108262	In macros.ini file variable IQN_INSTALL_PATH should be IQN2_INSTALL_PATH
SDOCM00108271	All fftc unit tests do not finish when run
SDOCM00108305	ARP and ARPING utilities missing from MCSDK 3.x file system
SDOCM00108306	matrix demo: demo_ipc.sh script to support loading and running number of DSPs based on EVM under test
SDOCM00108315	After machine name changes in Yocto, DUT kernel prompts are mixed up
SDOCM00108333	FFTC: Fftc_getDeviceAccumulatorConfig API parameter pAccRxQNum has wrong type
SDOCM00108335	Four SA projects do not compile for simulator due to undefined indentifiers
SDOCM00108348	SRIO_LoopbackK2KC66BiosTestProject does not compile due to undefined identifier
SDOCM00108349	aif2LteCheckRfK2KTestProject does not complete when run on EVM
SDOCM00108363	usermode LLD test nwal fails on k2hk platform
SDOCM00108364	Usermode LLD paUnit Test fails on k2hk platform
SDOCM00108365	RMLinuxdsp client test fails for all three platforms(k2e,k2l,k2hk)
SDOCM00108377	PA LLD: IPv4 reassembly test failed due to stats mismatch in software-reassembly mode
SDOCM00108380	SRIO_LoopbackK2KC66BiosTestProject compiles but does not complete when run on EVM
SDOCM00108409	Default Uboot environment variables for secure storage initialization are missing
SDOCM00108451	Enable busybox timeout command
SDOCM00108469	wireless LLDs: Use DSP compiler options for debuggability with optimization
SDOCM00108480	Bringing eth interface up after taking it down causes EVM to hang
SDOCM00108507	pdkProjectCreate.bat file left trace framework test projects out
SDOCM00108533	Transport netlib loopback test fails because of policy dtb file problem on K2H.
SDOCM00108539	Top level "make all" using devkit fails for SA, while executing the rule "tests"
SDOCM00108591	Keystone II AIF2 CSL header file bug
SDOCM00111667	Kernel timestamping test failures on K2HK
SDOCM00111669	bringing interface up / down repeatedly causes kernel crash
SDOCM00111707	traceframework projects do not build due to error #20: identifier "i" is undefined
SDOCM00111716	Three PA unit test projects are not building under Linux due to a directory name case mismatch
SDOCM00111718	Fourteen SA projects are not building under Linux due to a file name case mismatch
SDOCM00111719	Eight SA unit test projects are not building under Linux due to a directory name case mismatch
SDOCM00111720	tfw unittest projects are not building under Linux/Windows due to can't locate the package 'ti.uia.events' along the path
SDOCM00111750	Keystone II AIF2 CSL bug

SDOCM00112090	CPPI LLD: Merge Cppi_txChannelOpenWithHwCfg API from Appleton to support FM IO Halt port to K2
SDOCM00112091	FM: Merge IO halt feature to K2 from Appleton
SDOCM00112117	Resolve Coverity warnings for HPLIB
SDOCM00112119	Stop then start offload not working when using setkey
SDOCM00112127	hplib library without osal doesnt compile in bm_alloc.c
SDOCM00112138	Resolve issue with NETAPI ipsecmgr delete Sa interface API.
SDOCM00112181	RM LLD: There are some Rm_osalFree() calls with incorrect size
SDOCM00112182	PA LLD: Pa_delHandle() does not remove the root IP entry associated with an IPSEC entry
SDOCM00112222	Qmss_queueOpen fails with -151 when queue is > 8192 and queueType=QMSS_PARAM_NOT_SPECIFIED
SDOCM00112237	QMSS_exit() return error if both global and PASS QMSS are opened
SDOCM00112249	not able to build PDK on 3.01.00.02 & 3.0.4.18
SDOCM00102872	Issues on program EVM for MCSDK 3.0
SDOCM00106973	Getting "Internal error: Oops: a07 [#1] SMP ARM" dump when running performance test for sideband crypto on non-rt & rt kernel
SDOCM00107675	Supply Hyperlink SERDES configuration via DTS (instead of JSON file)
SDOCM00107876	Packet fail route handling in NetCP
SDOCM00107927	K2 NAND boot errata needs workaround in flash writer
SDOCM00107933	Default Hyperlink configuration (6p25/full) is not reliable on Slayton (VP1, VP2 cartridges..)
SDOCM00107949	MCSDK installer does not indicate MPM version number
SDOCM00108126	lperf performance test does not complete when run for IPSEC inflow egress.
SDOCM00108399	IPSEC with aes128/192/256 encryption and aesxcbc integrity causes EVM to stop responding during performance test
SDOCM00112294	PASS: IPSEC transport mode non-UDP/TCP packets dropped by PASS silently
SDOCM00107677	Keystone2 XGE driver SERDES configuration update
SDOCM00108064	Yocto build failed du to invalid URL in meta-mcsdk/recipes-core/rhino/rhino_1.7r4.bbappend
SDOCM00107159	Fix to XGE CDR Reset sequence in Linux
SDOCM00106473	Critical Bug in TCP3d driver
SDOCM00107501	Compilation issues observed when compiling with C++
SDOCM00103118	Kernel mtdtests failing on PG1.1 EVM
SDOCM00106426	Linux coherent memory is not mapped as outer shareable. This will cause race conditions with DMA coherency in certain cases
SDOCM00107206	need to disable all ports during initialization in cpsw
SDOCM00107154	K2: use DEVSPPEED frequency value to program PLL
SDOCM00105609	Linux Kernel needs to enable RX UDP/TCP checksum offload to NETCP
SDOCM00107335	Need to enhance ipsecmanager to use linux egress tunnel ESN as starting ESN when offloading a tunnel
SDOCM00107323	"TS_COMP output polarity" [need update on CPTS driver]
SDOCM00105615	Enable Ethernet Port 2,3 support in u-boot
SDOCM00106240	CSL_BootCfgGenerateInterDSPInterrupt is incorrect

SDOCM00106086	PCIe feature was broken in MCSDK 3.0.3 and cannot be tested with EVM while works with Slayton.
SDOCM00106007	UDMA unit test fails almost 20% of time if run multiple times with regular kernel
SDOCM00107695	Linux QoS configuration of OutThrotThresh is incorrect
SDOCM00105864	UDMA unit test fails with rt-kernel and rt-nfs combination.
SDOCM00107694	Linux misconfigures cirMax for QoS
SDOCM00107233	Need to fix Serdes TX coefficients API in Linux Driver
SDOCM00107876	Packet fail route handling in NetCP
SDOCM00107874	Packet exception handling in NetCP
SDOCM00107145	K2H with RT Linux can not handle the load above 20kpps
SDOCM00107049	HWQueue unit test fails with the message "failed to open write queue, errno=-22"
SDOCM00107025	ipsec inflow: (1) issues on egress path with ipsec context stored in skb
SDOCM00107004	PCIe feature was broken in MCSDK 3.0.3 and cannot be tested with EVM while works with Slayton.
SDOCM00107781	IPSecMgr: add_sa() failure triggers an del_sa() call with an invalid SA handle
SDOCM00107360	[Trace Framework] Need to build and test the Trace Framework to enable the call stack trace
SDOCM00106856	Resovle Coverity issues in IPSEC Mgr
SDOCM00107799	interrupt line is not assigned properly for timer15
SDOCM00096613	Cppi_initDescriptor in cppi_desc.c has some cache coherence issue
SDOCM00107237	QMSS with high priority accumulator mixes elements from different queues in the same list
SDOCM00106347	hwqueue linking ram 0 size improperly programmed
SDOCM00107453	CSL_CPSW_nGF_setAleMcastAddrEntry() doesn't accept 5 bits port mask
SDOCM00106809	Trace framework coverity issues
SDOCM00107629	pdkProjectCreate.bat file has hardcoded platform of ti.platforms.evmTCI6638K2K
SDOCM00107194	Traceframework: Warnigns noticed during DSP test application
SDOCM00108178	TCP3D: fix coverity issue for logical dead code (choosing between ping/pong buffer)
SDOCM00107021	Add support of CPTS HW TIMESTMP PUSH
SDOCM00104882	HPLIB needs to provide a memory free API
SDOCM00106488	Provide pre-compiled device files in PDK for Keystone-2
SDOCM00106203	SA LLD to allow ability to send data without the SA channel handle
SDOCM00106202	UIO Driver enhancement
SDOCM00107058	QOS FW currently integrated with Linux does not support 5WRR queue ports
SDOCM00102646	SA Examples do not use RM
SDOCM00107133	QMSS: Initialization of global variables in the .far section leads to large .cinit .far section
SDOCM00107645	ipsecmgr sampe application needs to provide option for user to give flow to use for egress offload
SDOCM00107292	UART autoflow control needs to be supported in MCSDK-Linux kernel

9.1.2 Known Issues

ID	Description
SDOCM00112268	(K2H/E/L) mpm-sync: Unit test does not complete
SDOCM00112269	(K2E) mpm-mailbox: Unit test for memory copy fails
SDOCM00112340	PA LLD: Deletion of the pair of IP/IPSEC entry may miss the IPSEC (SPI) entry due to firmware timing issue
SDOCM00112368	QM LLD: qmInsRegion unit test fails
SDOCM00112374	(K2E) mpm-transport: HyperLink transport does not work due to missing device tree entries
SDOCM00112391	(K2L) Image Processing Demo: Demo only works on two cores
SDOCM00108171	(K2E) RM ARM-to-DSP test fails
EVM Issue	XTIEVMK2X Rev 2.0: NAND flash and USB occasionaly fails
EVM Issue	EVMK2H (PG1.1) Rev 3.0: NAND flash and USB occasionaly fails
EVM Issue	TCIEVMK2L Rev 1.0: NAND flash and USB occasionaly fails