

SYSLIB

Release Notes

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SYSLIB 4.00.00.02

1 INTRODUCTION

1.1 Overview

This document provides the release information for the SYSLIB software package. The SYSLIB package includes the following:-

- SYSLIB Release Notes
- SYSLIB User's Guide
- Source code of all SYSLIB components
- Pre-built libraries (Little Endian) of all SYSLIB components
- API reference guide
- Software Manifest

This is an engineering tested alpha release package. Release notes from previous releases are also available in the release notes archive directory

2 RELEASE OVERVIEW

2.1 Hardware Device Support

The device and platforms tested for this release include:

- K2H
- K2K
- K2L

Please review the [Device section](#) for more details.

2.2 Components and Tools

The SYSLIB package is verified/tested using the **MCSDK 3.01.02.05** package. Please refer to the MCSDK Release notes for a list of all the component information. The following is the list of additional packages which were used to test the release:

1. SNOW3G 1.0.0.2
2. CUIA 1.01.00.06 Custom
3. UIA 2_00_03_43
4. [SA3GPP Enabler 3.0.0.0](#)

The SYSLIB supports **only the RT kernel** from the MCSDK release. Please use the RT DEVKIT for the development of user space applications.

2.3 Licensing

Please refer to the software manifest

2.4 MCSDK Patches

The section documents the MCSDK Patches which need to be added to the base MCSDK release.

2.4.1 Memory Reserve Size

Please ensure that the following environment variable is defined and saved in the UBOOT environment:-

```
setenv mem_reserve 1536M
```

This will ensure that the kernel reserved the higher order 1.5GB of memory for the DSP. Failure to do so will result in the kernel overwriting DSP memory. Application developers can modify and customize the DSP & ARM memory map. The default DSP SYSLIB memory map which is released in the `SYSLIB_INSTALL_PATH/ti/platforms` assumes the above reservation.

2.4.2 UIO Kernel Module

Please refer to the MCSDK Patches (`SYSLIB_INSTALL_PATH/ti/mcsdk_patches`) directory and apply the following UIO Kernel patch:

File Name	Issue	How to patch
<code>uio_module_drv.ko</code>	SCLTE-1892: Random Kernel crashes and lockups under load. This is only applicable for Queue Pend Interrupts.	<p>Remove and unload the kernel module</p> <pre>rmmod uio_module_drv.ko</pre> <pre>rm /lib/modules/3.10.10-rt7/extra/uio_module_drv.ko</pre> <p>TFTP the kernel module from <code>mcsdk_patches</code></p>

		<p>onto the EVM into the <code>/lib/modules/3.10.10-rt7/extra/</code> directory</p> <p>Reboot the EVM</p> <p>(Driver sources available from: http://git.ti.com/cgi/cgit.cgi/keystone-linux/uio-module-drv.git/, Tag: 01.00.02.02_eng)</p> <p>NOTE: This kernel module is applicable only for the RT Kernel. Please rebuild from the source for non-RT Kernel. The module will apply to the base MCSDK released kernel. Custom kernel builds will also need to rebuild from the driver sources.</p>
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2.4.3 Installing the SA 3GPP Enabler

As mentioned above the SA3GPP enabler is a prerequisite. While installing the SA3GPP; the installer will request for the PDK Path. This will ensure that the SA3GPP Installer will be correctly found and the DSP applications will be built properly. However the installer does not update the RT Linux development kit and so the following manual steps need to be done:

- Create directory `sa3gppEnabler` under the `ARAGODIR/include/ti/drv/sa`
- Copy the `sa3gpp.h` from the `PDK_INSTALL_PATH/ti/drv/sa/sa3gppEnabler` to the `ARAGODIR/include/ti/drv/sa/sa3gppEnabler`
- Copy the `sa3gppver.h` from the `PDK_INSTALL_PATH/ti/drv/sa/sa3gppEnabler` to the `ARAGODIR/include/ti/drv/sa/sa3gppEnabler`
- Copy the library `libsa3gpp.a` from the `PDK_INSTALL_PATH/ti/drv/sa/sa3gppEnabler/lib/armv7` to the `ARAGODIR/lib` folder

NOTE: Due to licensing the SA3GPP enabler is not enabled in the default NETFP Server executable. For customers to have signed the 3GPP license the NETFP Server (`ti/apps/netfp_server/netfp_server.c`) needs to be patched as described below:-

```
gNetfpServerMCB.netfpServerHandle = Netfp_initServer (&serverConfig, &errCode);
if (gNetfpServerMCB.netfpServerHandle == NULL)
...

/* Enable the SA 3GPP Enabler: */
Sa_3gppEnabler();
```

This patch will allow customers to use the EEA1 and EIA1 services. Failure to apply the patch will cause the LTE channel creation to fail.

2.4.4 DTS File Updates

NOTE: Please integrate the SYSLIB released DTS files for the specific device with your application and always update the kernel DTB files and SYSLIB RmV2 DTB files. Failure to do so will result in out of the box failures.

2.4.4.1 K2H/K2K

The kernel DTS files have been modified for the following features:-

- GIC Queues 8722 to 8735 were originally reserved for the Linux kernel. These queues are not used by the Linux kernel so these have been marked as unreserved and could not be used by the ARM applications
- Wiring of the GIC Queue and INTC_SET2 interrupt queues from using the UIO module.

Along with the kernel DTS file; the SYSLIB RmV2 files have also been modified for the following features:-

- GIC Queues 8722 onwards have been marked as usable
- INTC_SET2 queues have been allocated to ARM
- Wildcarding support
- Simplified L2 and L3 QoS shapers. This is for illustration only. Customers are recommended to modify the shapers as per their requirements.

2.4.4.2 K2L

The kernel DTS files have been modified for the following features:-

- GIC Queues 546 to 559 were originally reserved for the Linux kernel. These queues are not used by the Linux kernel so these have been marked as unreserved and could not be used by the ARM applications
- Wiring of the GIC Queue and SOC_SET_1 interrupt queues from using the UIO module.

Along with the kernel DTS file; the SYSLIB RmV2 files have also been modified for the following features:-

- GIC Queues 546 onwards have been marked as usable
- SOC-SET1 queues have been allocated to ARM

- Wildcarding support
- Simplified L2 and L3 QoS shapers. This is for illustration only. Customers are recommended to modify the shapers as per their requirements.

3 What's new

3.1 New Features

3.1.1 NETFP Master Priority override support

The NETFP Master configuration file has been updated and a new field called “priority_override” has been added. This field is only applicable if the routing mode for the interface is set to dp-bit.

3.1.2 NETFP Wild Carded LUT entry support

Wild carded NAT-T LUT entry support is added. This feature is enabled through “natt_wildCardedEntry” in Netfp master configuration file.

3.2 Bug/feature list in JIRA:

Issue Type	Key	Summary
Bug	SCLTE-2380	NETFP Proxy Server Interface asynchronous notification can cause unaffected fast paths/SA states to be modified
Bug	SCLTE-2382	Local trace object does not copy the 2nd half properly
Bug	SCLTE-2351	Collisions between NAT-T LUT1_1 rules and ingress cleartext rules
Bug	SCLTE-2354	Inefficient allocation of LUT1_1 entries for NAT-T IPsec tunnels
Bug	SCLTE-2369	Memory leak in NetfpProxy_ifaceInstantiate function
Bug	SCLTE-2357	Disable CRC generation for Hawking forwarding rules
Bug	SCLTE-2368	Interface list broken on GA release
Story	SCLTE-2329	Priority overwrite setting for IP packets in pbit mode L2 shaper
Bug	SCLTE-2303	Netfp redefines some linux defines
Bug	SCLTE-2363	Scope of the temporary variable needs fix
Bug	SCLTE-2348	State of SP set incorrectly
Bug	SCLTE-2355	netfp_server crash when rekeying with unreachable SA config
Bug	SCLTE-2356	Incorrect pointer passed to "free" function in _Netfp_createInboundFastPath causing Server Crash
Story	SCLTE-2298	IP Reassembly. IPv6 extended headers support
Bug	SCLTE-2340	Dscp populated incorrectly in IPv6 header
Bug	SCLTE-2331	VLAN priority bit marking for fast path flows are incorrect

3.3 Known Issues:

Issue Type	Key	Summary	Priority
SDOCM00114690		Memory leak in network drivers on repeated ifconfig down and up.	Major

Issue Type	Key	Summary
Story	SCLTE-1870	Support WCDMA Frame Protocol CRC calculations
Story	SCLTE-2240	Add DAT support for K2L in syslib4
Story	SCLTE-1494	FAP Tracing Buffering
Task	SCLTE-2312	eQOS/Cascading has not been verified on K2L
Bug	SCLTE-2294	NETMGR Routing Cache shall not be updated without explicit IPC Route Flush
Bug	SCLTE-2019	Fixed 1GHz clock used in DAT_TIME_ELAPSED
Bug	SCLTE-2045	syslib4 netfp_server may crash during cell shutdown
Bug	SCLTE-2199	PA does not support NAT-T with previous IP link
Story	SCLTE-1576	CountC control for fast path mapped radio bearers
Story	SCLTE-1377	Outer IP Fragmentation option
Bug	SCLTE-2330	High volume traffic generated by multiple fragmented flows using both IPv4 and IPv6 locks SA

RELEASE BUILDING

SYSLIB release build & environment configuration scripts which are located in the SYSLIB Install directory `scripts` folder. Please setup the following environment variables:-

```
export
ARMTOOLS_INSTALL_PATH=/home/a0868491/tools/gcc-linaro-arm-linux-gnueabi-4.7-2013.03-20130313_linux

export
ARAGO_INSTALL_PATH=/home/a0868491/ti/mcsdk_linux_3_01_02_05_devkit_rt/sysroots/cortexa15hf-vfp-neon-3.8-oe-linux-gnueabi

export CGT_INSTALL_PATH=/home/a0868491/ti/cgt_7.4.8

export XDC_INSTALL_PATH=~/.ti/xdctools_3_30_04_52
```

```

export PDK_INSTALL_PATH=~/.ti/pdk_keystone2_3_01_02_05/packages
export SNOW3G_INSTALL_PATH=~/.ti/snow3g_1_0_0_2/packages
export UIA_INSTALL_PATH=~/.ti/uia_2_00_03_40_eng/packages
export INSTALL_JAMMER_INSTALL_PATH=~/.tools/installjammer-1.2.15
export BIOS_INSTALL_PATH=~/.ti/bios_6_40_04_47/packages
export IPC_INSTALL_PATH=~/.ti/ipc_3_30_01_12/packages
export CUIA_INSTALL_PATH=~/.tools/cuia_1_01_00_06Custom
export SYSLIB_DEVICE=k2h
export SYSLIB_INSTALL_PATH=~/.ti/syslib_4_00_00_00/packages

```

The environment variables are illustrative and should be modified by the customer as per their install paths. Once configured please setup the build environment by executing the following script:-

```

cd scripts
source setupenv.sh

```

This will setup the build environment and will also sanity check to make sure that all the required environment variables are configured.

3.4 Building the ARM Libraries, Servers & Unit Tests

Once the build environment is configured; please execute the following script to build the libraries for a specific device:-

```

cd scripts
source dev.sh <DEV_NAME> <ARM_BUILD> <DSP_BUILD> <DEMO_BUILD> <ARM_UNIT_TEST>
<DSP_UNIT_TEST>

```

Argument	Description
DEV_NAME	Name of the device for which the builds need to be done. Valid values are k2h, k2k and k2l
ARM_BUILD	Set to 1 to build the ARM libraries and standard SYSLIB Servers

DSP_BUILD	Always set to 0. To build the DSP Libraries please refer below
DEMO_BUILD	Set to 1 to build the DEMO for the specific device
ARM_UNIT_TEST	Set to 1 to build the ARM Unit Test for all the SYSLIB modules
DSP_UNIT_TEST	Set to 1 to build the DSP Unit Test for all the SYSLIB modules

Example: To rebuild the ARM Libraries/applications for K2H

```
source dev.sh k2h 1 0 0 0 0
```

Example: To build the ARM Libraries & Unit Tests for K2L

```
source dev.sh k2l 1 0 0 1 0
```

3.5 Building the DSP Libraries

Ensure that the SYSLIB_DEVICE is correctly configured in the environment variable. The example below selects the device as K2L

```
export SYSLIB_DEVICE=k2l
```

Modify the environment variable

```
export SYSLIB_INSTALL_PATH=~/.ti/syslib_4_00_00_00
```

NOTE: There is no /packages at the end of the SYSLIB_INSTALL_PATH

Once configured please setup the build environment again by executing the following script:-

```
cd scripts
source setupenv.sh
```

To rebuild SYSLIB DSP Libraries; please do the following from the top level directory:-

```
xdc clean -PR .
xdc -PR .
```

3.6 Building the DSP Unit Tests

DSP Unit Tests are built using the script described above. **Example:** To build all the DSP Unit Tests for K2L

```
source dev.sh k2l 0 0 0 0 1
```

4 Device Support

Please read the following section which documents details about each SYSLIB supported device:

4.1 K2H

Kernel DTS Files	ti/runtime/resmgr/dts/k2h
RMv2 DTS Files	ti/runtime/resmgr/dts/k2h
DSP Memory Map	ti/runtime/platforms/tmdxevm66381xe
ARM Compilation Flags	-D_LITTLE_ENDIAN -D__ARMv7 -DDEVICE_K2 -DDEVICE_K2H -D_GNU_SOURCE -D_VIRTUAL_ADDR_SUPPORT
DSP Compilation Flags	--define=DEVICE_K2 --define=DEVICE_K2H
PA Library on DSP	var Pa = xdc.useModule('ti.drv.pa.Settings'); Pa.deviceType = "k2h"
PA Library on ARM	-lpa
SOC Sample configuration	ti/apps/soc_init/soc_k2h.conf

file	
NETFP Master configuration file	ti/apps/netfp_master/netfp.conf
Library & Executable Suffix	_k2h

4.2 K2K

Kernel DTS Files	ti/runtime/resmgr/dts/k2h
RMv2 DTS Files	ti/runtime/resmgr/dts/k2h
DSP Memory Map	ti/runtime/platforms/tmdxevm66381xe
ARM Compilation Flags	-D_LITTLE_ENDIAN -D_ARMv7 -DDEVICE_K2 -DDEVICE_K2K -D_GNU_SOURCE -D_VIRTUAL_ADDR_SUPPORT
DSP Compilation Flags	--define=DEVICE_K2 --define=DEVICE_K2K
PA Library on DSP	var Pa = xdc.useModule('ti.drv.pa.Settings'); Pa.deviceType = "k2k"
PA Library on ARM	-lpa
SOC Sample configuration file	ti/apps/soc_init/soc_k2k.conf
NETFP Master configuration file	ti/apps/netfp_master/netfp.conf
Library & Executable Suffix	_k2k

4.3 K2L

Kernel DTS Files	ti/runtime/resmgr/dts/k2l
RMv2 DTS Files	ti/runtime/resmgr/dts/k2l
DSP Memory Map	ti/runtime/platforms/k2l
ARM Compilation Flags	-D_LITTLE_ENDIAN -D_ARMv7 -DDEVICE_K2 -DDEVICE_K2L -D_GNU_SOURCE -D_VIRTUAL_ADDR_SUPPORT
DSP Compilation Flags	--define=DEVICE_K2 --define=DEVICE_K2L
PA Library on DSP	var Pa = xdc.useModule('ti.drv.pa.Settings'); Pa.deviceType = "k2l"

PA Library on ARM	-lpa2
SOC Sample configuration file	ti/apps/soc_init/soc_k2l.conf
NETFP Master configuration file	ti/apps/netfp_master/netfp_k2l.conf
Library & Executable Suffix	_k2l

NOTE: The PA library on K2L is different. Including the wrong library will result in run time failures.