Intel® Media Streaming Library for ST 2110 Release Notes for 0.6.1

Revision: 1.2

September 2021

Revision History

Date	Revision	Reason for Changes
September 2020	0.5	Initial release of the document for the first review.
January 2021	0.6	Known issues updated; HT information added.
June 2021	1.0	0.5 Release
August 2021	1.1	0.6 Release
September 2021	1.2	0.6.1 Release

Table of Contents

1. Definitions

Term	Definition
DPDK	Data Plane Development Kit
SMPTE	Society for Motion Picture and Television

2. Introduction

This document provides a brief introduction to the Intel® Media Streaming Library for ST 2110, lists known issues, and provides available workarounds. In addition, a list of important acronyms and terminology is provided. The content of this document will be updated as applicable, and updates will be reflected in the Revision History.

The Intel® Media Streaming Library for ST 2110 is an implementation of a library that uses DPDK to accelerate lossless media transfer using IP networks. It implements the SMPTE (Society for Motion Picture and Television Engineers) ST 2110 standard for the transmission of digital video, audio, and auxiliary data over an IP network.

This library utilizes the Open Source DPDK (Data Plane Development Kit) to accelerate the transfer of packets by eliminating much of the kernel processing, interrupt handling, and data copying typically required with sending and receiving network data.

3. Supported Features

This version of the Intel® Media Streaming Library for ST 2110 supports following functionalities:

- Transmit/Receive Raw Video Frames in HD-SDI format (Pixel format: YUV 4:2:2 10bit)
  - Tested video formats are: 1080p59 and 1080p50.
  - Early support for 1080p29, 1080p25.
- Transmit/Receive Raw Audio Frames and Ancillary data.
- Support for 10/25/40 Gbps Intel Fortville Network Interface Cards.
- Support for 10/25/100 Gbps Intel Columbiaville Network Interface Cards.
- Supports transmit and receive for unicast and multicast.
- Time synchronization using PTP (Precision Time Protocol).
- Supports IGMP v2 and selected v3 functionalities.

- ST 2110 protocols suite supported:
  - ST 2110-20
  - ST 2110-21 (experimental)
  - ST 2110-30
  - ST 2110-40
  - ST 2022-7
- Supports Rate-Limit pacing mode for Columbiaville Network Interface Cards for strict EBU LIST compliance in the “narrow” sender mode.

4. Supported versions

4.1 OS

Developed and tested using Ubuntu 20.04 LTS with Linux kernel 5.4.0.

4.2 Components and tools

- Compiler: GCC 7.5.0
- DPDK: 21.05

4.3 NIC support

Intel® Ethernet Controller E710 (Minimum Firmware version: 8.40; Minimum driver version: 2.16.11):

- 40 GbE
- 25 GbE
- 10 GbE

Intel® Ethernet Controller E810-C (Minimum Firmware version: 2.50; Minimum driver version: 1.6.4):

- 10 GbE
- 25 GbE
- 100 GbE

Note: To fully support library, NICs need to be updated to the proper versions of drivers and firmware (see above). Instruction how to update drivers and firmware on the card is in the section 4.4.

4.4 Update drivers/firmware on NICs

Update Intel® Ethernet Controller E710

1. Download the newest driver pack from:

   https://downloadcenter.intel.com/download/22283/Intel-Ethernet-Adapter-Complete-Driver-Pack

2. Follow instructions of installation in the Readme:

   https://downloadmirror.intel.com/22283/eng/readme_26.4.txt

Update Intel® Ethernet Controller E810-C

3. Download the newest driver pack from:

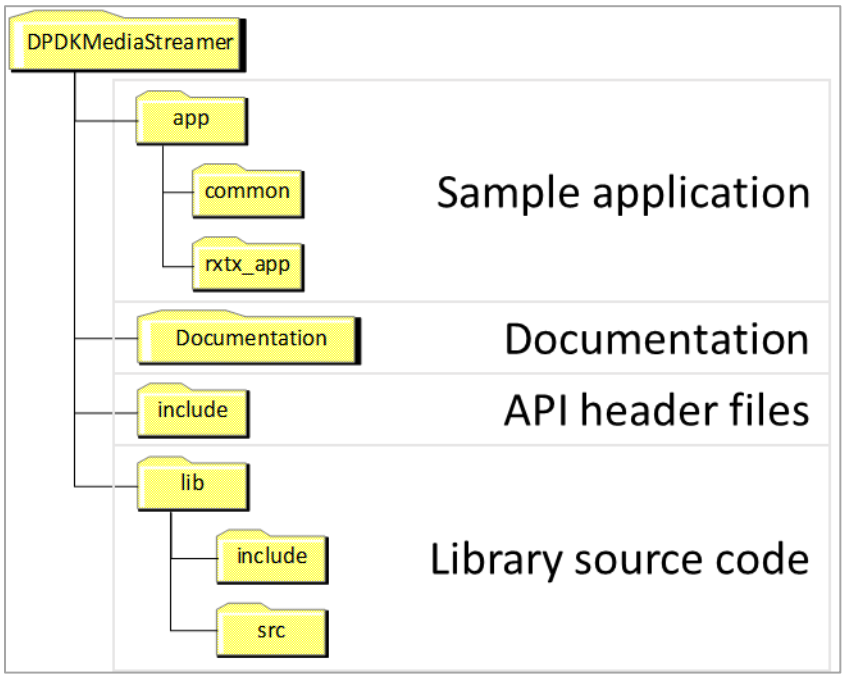
   https://downloadcenter.intel.com/download/22283/Intel-Ethernet-Adapter-Complete-Driver-Pack

4. Follow instructions of installation in the Readme:

   https://downloadmirror.intel.com/22283/eng/readme_26.4.txt

5. Release content

Structure of folders:



Folder name	Description
DPDKMediaStreamer	Main folder of the *Intel® Media Streaming Library for ST 2110* project.
app	Folder with reference implementation of the library usage. Basic scenarios for TX and RX implemented
common	Common components for sample application
rxtx_app	Main source code for the sample application
Documentation	Folder with documentation.
include	API headers with public interface of the *Intel® Media Streaming Library for ST 2110* project
lib	Main folder of the library
include	Header files for internal library implementation
src	Main source code of the library.

6. Validation platforms

This release was validated on the following platforms:

Platform description	NIC	Switch
Intel(R) Xeon(R) Platinum 8260M CPU @ 2.40GHz (Cascade Lake), 96 cores, 507GB RAM, Disk: Intel SSD SCKKB480GB	Intel® Ethernet Controller X710, 10 GbE NVM 8.40, Driver 2.16.11	Summit X670V-48x
Intel(R) Xeon(R) Gold 6140 CPU @ 2.30GHz (Skylake), 72 cores, 257GB RAM, Disk: Intel SSD SCKKB480GB	Intel® Ethernet Controller X710, 25 GbE NVM 8.40, Driver 2.16.11	Summit X670V-48x
Intel(R) Xeon(R) Gold 6140M CPU @ 2.30GHz (Skylake), 88 cores, 95GB RAM, Disk: Intel SSD SCKJB240G7	Intel® Ethernet Controller X710, 40 GbE NVM 8.40, Driver 2.16.11	Mellanox SN2100 40G
Intel® Xeon(R) CPU E5-2699 v4 @ 2.20GHz (Broadwell), 88 cores, 128GB RAM, Disk: Intel SSD SC2BB240G4	Intel® Ethernet Controller X710, 10 GbE (4 ports) NVM 8.40, Driver 2.16.11	Arista 7060CX2-32S
Intel(R) Xeon(R) Gold 6140 CPU @ 2.30GHz (Skylake), 72 cores, 88GB RAM, Disk: Intel SSD SC2BP240G4	Intel® Ethernet Controller X710, 25 GbE NVM 8.40, Driver 2.16.11	Arista 7060CX2-32S
Intel(R) Xeon(R) Gold 6252 CPU @ 2.10GHz (Cascade Lake), 96 cores, 47GB RAM, Disk: Intel SSD SC2KW240H6	Intel® Ethernet Controller E810-C, 100 GbE NVM 2.50, Driver 1.6.4	Arista 7060CX2-32S

Note: Minimum CPU required for either TX or RX is 6 cores. For more details, please, see *Hardware Considerations* section in the README.MD file.

7. Known issues

No.	Description
1	Library outputs a log “Conflicting rules exist”. <*Workaround*> This is known DPDK PMD logging issue for Fortville NIC. RTE FLOW rules are applied hence no fix must be provided.
2	IGMP v3 packet "leave group" is not sent from RX app during application exit. <*Workaround*> None. As per IGMP v3 standard “leave group” packet is optional. Under investigation for next release.
3	Sample app in the redundant path mode accepts the same IP as primary and redundant path. <*Workaround*> None. Please provide different IP addresses with the command-line options.
4	Maximum number of 26 ST2110-20 Video sessions of format 1080p59 are supported and verified on E810-C NIC with Intel(R) Xeon(R) Platinum 8280M CPU @ 2.70GHz system when pinning library cores to the same NUMA node as NIC. <*Workaround*> None.
5	Library does not select free or underutilized performance cores. <*Workaround*> Select performance cores and ensure no other applications are running with help of grub ISOL (as documented in README.md).
6	Sample app allows one to create more Rx sessions than it should be possible. <*Workaround*>. None.
7	Library supports a minimum of 1 video session. <*Workaround*> None.
8	Non ST2110 traffic sent to NIC ports utilized by Media Streamer can affect video transmission. <*Workaround*> None.
9	In the dual mode, the sample app allows GUI only for either the receiver or transmitter, not for both. <*Workaround*> None. Will be investigated.

10	When fast switching between several sessions in the sample app GUI with arrow keys, sometimes the app crashes. <Workaround> None. Will be investigated.
11	Random ST_KNI errors in the sample app with large number of sessions. <*Workaround*> This is an error in the Linux kernel module. A machine reboot is necessary in case it occurs. Will be investigated.
12	Unknown symbol i40e Linux kernel errors at sample application exit. <*Workaround*> These are errors in the DPDK library. Will be investigated.
13	Sample app crashes after some irregular time with “mutex assertion failed” message. <*Workaround*> None. Will be investigated.
14	Various problems reported for the ancillary data stream. <*Workaround*> None. Will be investigated
15	Memory leak observed in binding an IP address in Rx session <*Workaround*> None. Will be investigated.
16	High rx_nombuf value in receiver statistics <*Workaround*> None. Will be investigated.