Broadcast Systems SDK for Multichannel AV Transcoder

BSS-MTS-SDK

Product Brochure

- Based on H.264 / MPEG2, HD / SD, interlaced / progressive video on DM8169/DM8168
- Target Applications: Head-End Servers, IPTV and other Distribution Services
MULTI-CHANNEL TRANSCODING SYSTEM

Multimedia Blocks for Multi-Channel Transcoder System

- **SOLUTION BENEFITS**
  - High-density audio and video transcoding
  - Transcoding from any to any video resolution
  - Broadcast quality ISO / IEC – 13818 – Part 1 compliant output TS streams with AV synchronization
  - Multiple input / output interfaces: Ethernet / ASI* / Buffer*
  - Multiple audio – video codec combinations
  - Reduces time to market with complete transcode system implementation on DM8169/DM8168

- **TARGET PLATFORM (s)**
  - DM8168, DM8169; OS: Linux
  - Solution available on TI’s DM8168 Evaluation Module / Ittiam’s neonCaster

- **PRODUCT SUITE / OFFERING**
  - Complete Multimedia Transcoding System (MTS) with media (Video and Audio) subsystem supporting transcoding of 2 channels of HD / 8 channels SD of H264/MPEG2 to H264/MPEG2 video
  - API Document and User Guide for the DM8169/DM8168 software and the media subsystem software included in the MTS application
  - Test Plan and Test Report Documents for the DM8169/DM8168 Software
  - Modular Software Architectures enables easy porting to custom hardware board
  - Application demonstrating use cases and APIs in source form for easy integration into customer specific application
  - Optional: Custom Hardware Reference Design and Associated BSP

- **STANDARD FEATURES**
  - AV transcoding system: Video - H264/MPEG2, Audio - AAC/MP12
  - Simultaneous transcoding of 2HD/2HD to SD/8 SD AV channels
  - Automatic input video resolution detection
  - Support for dynamic change of encoded bitrate to enable statistical multiplexing
  - Input video aspect ratio to be used for output
  - MPTS support at output
  - Propagation of AFD information from input to output*
  - Generation of T-STD buffer compliant Transport Streams
  - Sample Application with user configurable parameters via WebUI

- **ADVANCED FEATURES**
  - Additional channels of transcoding subject to use-case feasibility*
  - Low end to end delay and fixed delay support*
  - Windowing support for non-standard video resolutions*
  - Support for audio AC3^ decoder and encoder
  - MPTS support at input* and output
  - Multiple audio channels for single video source*
  - De-Interlace and Scale*
  - Support for closed caption*

*Optional offering / 3rd party
### Technical Specifications

#### Media Features / Formats
- **System Input:** MPEG2-TS SPTS / MPTS * over IP / ASI* / Buffer*
- **System Output:** MPEG2-TS SPTS / MPTS * over IP / ASI* / Buffer*
- **Video Input:**
  - H.264 HP, MP, BP
  - MPEG2 MP
  - 2HD/8SD
- **Video Output:**
  - H.264 HP, MP, BP
  - MPEG2 MP*
  - 2HD/8SD
  - Bitrate up to 15Mbps
- **Audio Input:**
  - MP12
  - AAC-LC
  - AC-3 / EAC-3^*
  - HE-AAC (ADTS)
- **Audio Output:**
  - MP12
  - AAC-LC
  - AC-3 / EAC-3^*
  - HE-AAC (ADTS)
  - Bitrate up to 192 kbps for 2 channels and 640 kbps for 5.1 channels
  - Optional audio Pass-through

#### User Features
- User configurable output video resolution
- User configurable output video bitrate mode – VBR / CBR
- Configurability to set TS parameters like stream PID, PAT interval, PMT interval and PCR interval
- Initialization time and Run time controls for target encoded bit rate
- Configurability to set intra-period and inter-period

#### Exceptions and Errors
- Comprehensive error detection, reporting and recovery mechanism

#### Standards Compliance
- MPEG2 Video Encoding / Decoding: ISO/IEC 13818-2
- H.264 Video Encoding / Decoding: ISO/IEC 14496-10
- MP12 audio Encoding / Decoding: MPEG-2 Audio Layer III ISO/IEC 13818-3
- AAC-LC audio Encoding / Decoding: MPEG-4 AAC-LC ISO/IEC 14496-3
- HE-AAC audio Encoding / Decoding: MPEG-4 AAC-LC ISO/IEC 14496-3
- AC3 audio Encoding / Decoding: ATSC A/52B
- MPEG2-TS: ISO/IEC 13818 – 1
- Fully interoperable with industry standard STBs and other devices

#### Platform Details
- DM8168 EVM / neonCaster:
  - 1.2 GHz Cortex A8
  - 600 MHz HDVICP2.0
  - 1 GHz DSP
  - 796 MHz, 32 bits DDR3
  - EZSDK 05.03.01.15

#### Reliability
- Software Development as per Ittiam Quality Management System - Product Realization Process
- Production tested and proven to work on DM8168 Evaluation Module
- Proven to work over multitude of open and closed networks
- Interoperability tested with a host of industry standard video playback systems

#### Roadmap
- Ancillary data, meta data transcoding
- Clock recovery
- Dynamic GOP adaptation
- CALM based loudness monitoring and control
- Statistical multiplexing
- Splicing
- Re-sampling and channel conversion for audio
- Intelligent Transcoding
- Logo Insertion

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* - Indicates features that are not a part of standard SDK offering, but can be customized based on customer requests
^ - Integration of AC3/E-AC3 requires confirmation from Dolby Systems
• **ITTIAM BROADCAST SOLUTIONS**

  Ittiam’s Broadcast Solutions for Original Equipment Manufacturers (OEMs) include high quality Codecs and production ready Software Systems for applications in Contribution, Distribution and Multiscreen Delivery. Available for licensing as integrated SDKs, together with Ittiam’s neonCaster Hardware Platform, these solutions enable OEMs to significantly shorten time to market for their products.

  * neonCaster
    - The neonCaster Gen II Hardware Platform is a configurable and scalable platform for high performance, high density broadcast applications. With support for multi-channel HD encoding and transcoding, this platform can realize a range of applications in the broadcast market. neonCaster Gen II Platform employs a flexible multi-module architecture which can be leveraged to create differentiated, cost-effective broadcast solutions. At the core of the architecture is the Netra Processor Module (NPM) which is based on Texas Instrument’s DM816x (Netra) Processor. NPM interfaces with different I/O Boards to meet Audio/Video interface requirements of the end product. The Platform is intended to be housed in a 1 RU system.

**Example Configurations**

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<thead>
<tr>
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<tbody>
<tr>
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<td>• Simultaneous transcoding of 2 HD (upto 1080i60/1080p30) video channels (H.264/MPEG2)</td>
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<td>• Simultaneous transcoding of 2 stereo audio channels (MP-12/AAC-LC)</td>
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