Cimarron Systems
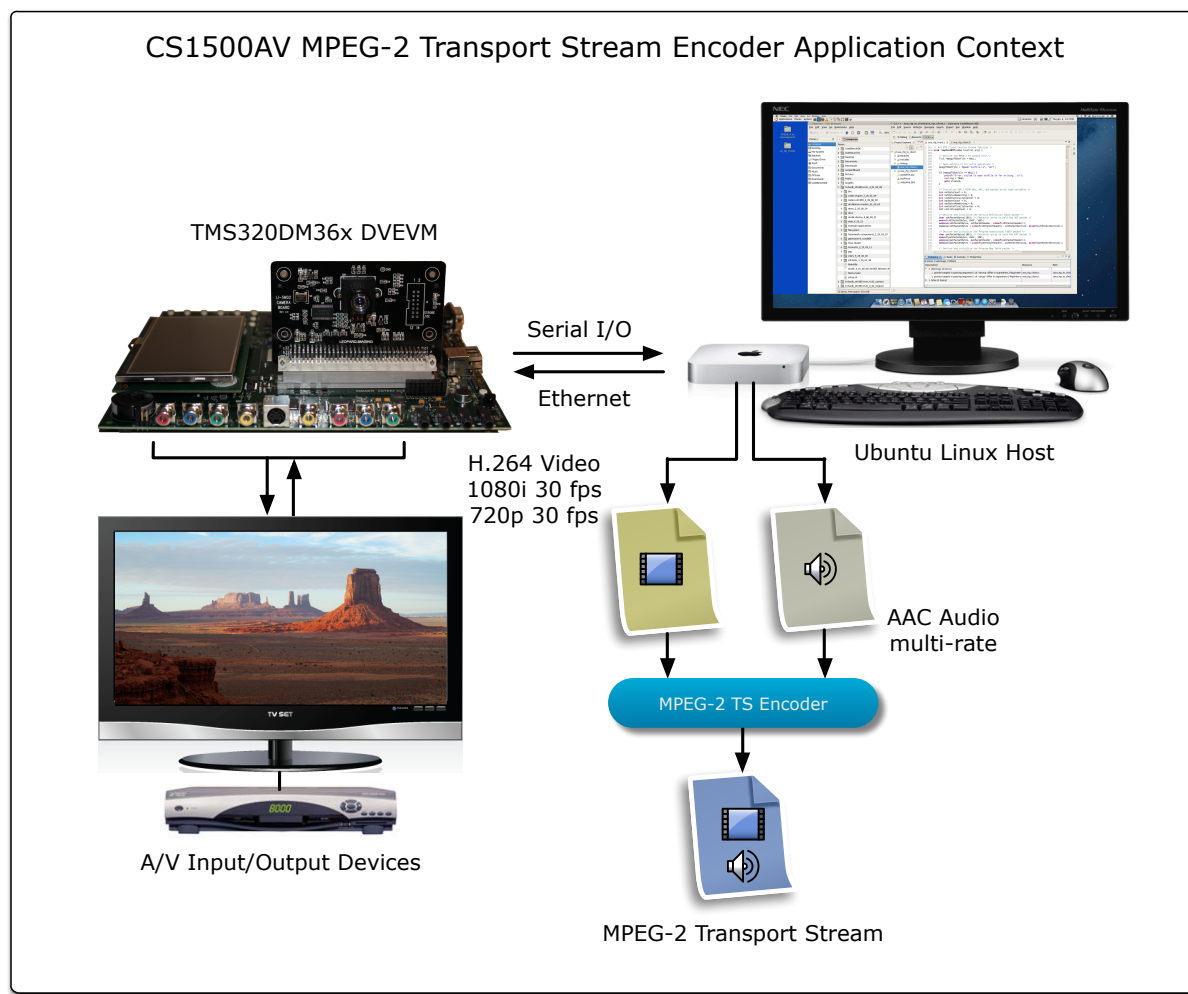
CA1500AV MPEG-2 Transport Stream Encoder Datasheet

The Cimarron Systems CS150AV MPEG-2 Transport Stream Encoder application conforms to ISO/IEC 13818-1, 2, 3, and 7; ITU-T Recommendation H.264; and ISO/IEC 14946-3 for audio/video objects. The application multiplexes encoded H.264/AAC bitstreams files into a canonical MPEG-2 Transport Stream (TS).

User Environment

Figure 1 shows a context diagram of the typical environment in which the CS1500AV MPEG-2 TS Encoder application operates (refer to any of the Digital Media SDK datasheets, e.g., the CS368-TI, for details).

Figure 1: CS1500AV MPEG-2 Transport Stream Encoder Application Context Diagram.

Application Features

The CS1500AV MPEG-2 Transport Stream Encoder application—which includes well-commented 'C' source code, make and utility files, a software developers guide, and example H.264/AAC source as well as encoded test clips—is implemented in accordance with international standards such that MPEG-2 Transport Streams it produces are playable on many popular media players—Figure 2 shows the output from a MPEG-2 Analyzer for a typically encoded stream.[1]

The encoder implements the following functions:

- For 1080i, 720p, or D1 30 fps H.264 encoded video plus AAC-LC ADTS encoded audio, synchronizes the encoded H.264 video with the simultaneously-encoded AAC audio by programmatically adjusting the start of video relative to audio such that A/V start is synchronized.

  Additionally, the application features an embedded analysis tool that examines both the H.264 video / AAC audio files for correctness, e.g., it identifies missing, corrupted, and miss-encoded frames, which allows immediate corrective action to be taken.
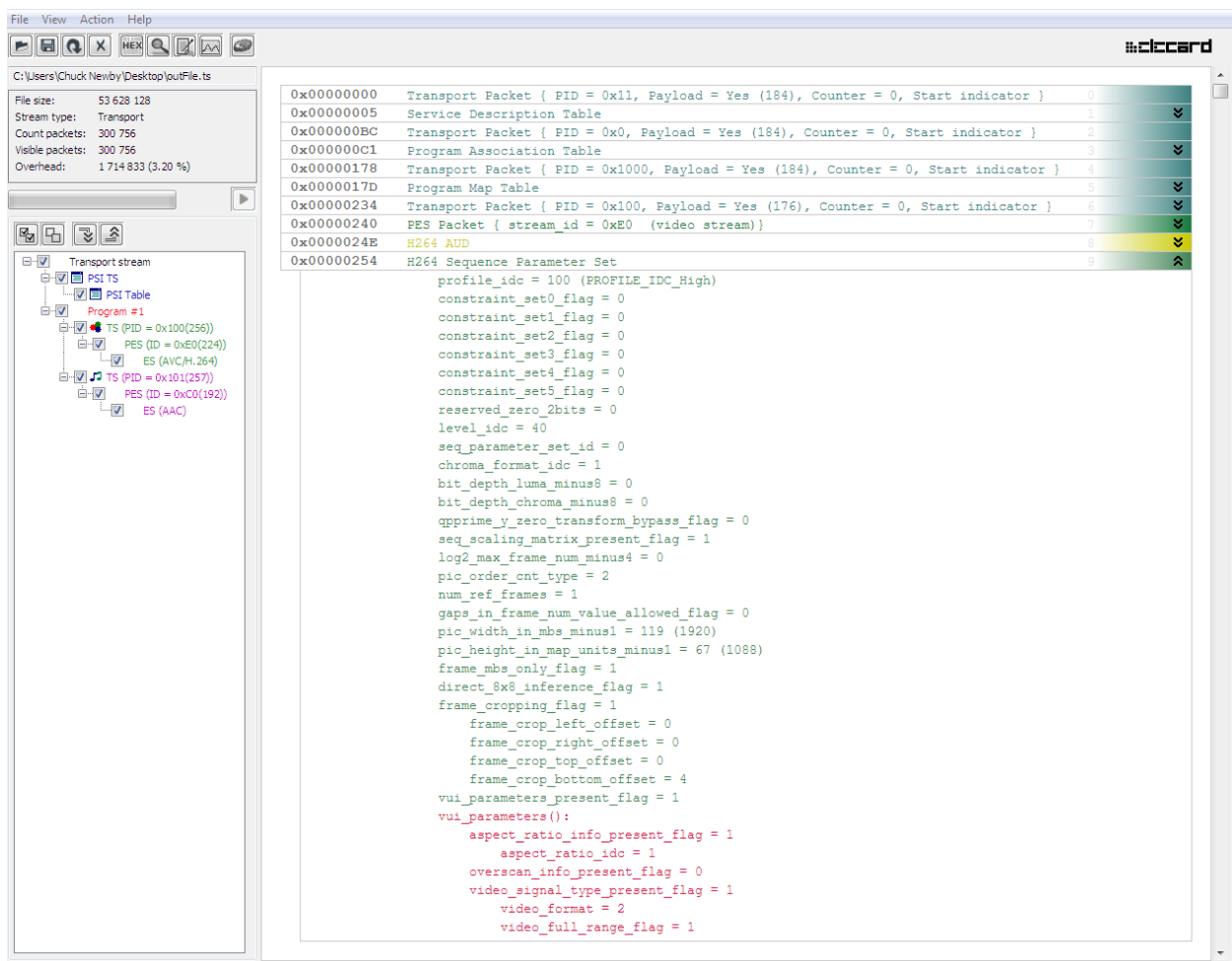
Figure 2: MPEG-2 Transport Stream Analyzer Output for a CS1500AV Encoded Stream.

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[1] Typically, the H.264/AAC source files are encoded from a Cimarron Systems Digital Media SDK but other encoding tools that produce proper H.264 video / AAC audio streams will operate with the MPEG-2 Transport Stream Encoder application.

- Creates then updates Service Definition Table (SDT), Program Association Table (PAT), and Program Map Table (PMT) Service Information (SI) tables.
- Creates then updates the Program Clock Reference (PCR) and Presentation Time Stamp (PTS) within the Packetized Elementary Streams (PES).
- Multiplexes H.264 I and P frames into a video PES.
- Multiplexes AAC-LC ADTS frames into an audio PES.
- Multiplexes the video PES and audio PES into the MPEG-2 Transport Stream.
- Writes the MPEG-2 Transport Stream to the specified file, for example, outFile.ts.

Importantly, the stream files produced by the MPEG-2 Transport Stream Encoder application have been validated by several industry standard MPEG-2 Transport Stream Analyzers including from Elecard and others.

System Requirements

The CS1500AV MPEG-2 Transport Stream Encoder application has been designed for and tested with Ubuntu Linux OS (10.04 or later) and Mac OS X (Snow Leopard or later).

For more information regarding this and other Cimarron Systems products, please contact us using the contact information below.

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Revision History:

Date	Version	Notes
12/1/2012	version 1.0	initial version.
1/5/2014	version 2.0	minor editorial changes.
4/17/2017	version 2.5	minor editorial changes.