

Intel® Stress Bitstreams and Encoder 2016 - HEVC

Release Notes

(Version 2.1)

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Overview

The **Intel® Stress Bitstreams and Encoder 2016 - HEVC** are designed to ensure decoder compliance with HEVC. Streams cover features of **HEVC Main, Main10 and Format Range Extensions profiles High Tier 6.2 level** format and can be used to prove that decoder supports all these features.

Features

The **Intel® Stress Bitstreams and Encoder 2016 - HEVC** Bitstreams includes some sets that are designed for validation of the features related to specific parts of HEVC correspondingly, e.g. INTRA set covers intra specific features and EXTRA set contains streams covering other HEVC format features not directly related to intra or inter prediction.

There are some types of streams such as Syntax, Stress and Smaller. Syntax streams are designed to test certain subsets of features. Stress streams include all the features covered by the bucket. A Smaller stream is similar to a Stress stream of INTER bucket, the major purpose is to test the decoder's ability to handle very small resolutions.

The **Intel® Stress Bitstreams and Encoder 2016 - HEVC** Encoder is highly configurable and flexible syntax (HEVC) encoder tool. In opposite to regular encoders it is not intended to achieve compression but only designed to create a valid specification-compliant stream.

Compliant streams contain only allowed combinations of syntax elements and their levels to test decoder for unusual cases or boundary stress cases.

The **Intel® Stress Bitstreams and Encoder 2016 – HEVC** Encoder accepts as an input 8-bit *YUV file* and *PAR file* a describing test settings: features to utilize, fixed values, random values. As an output Random Encoder produces encoded bitstream and optionally writes *YUV file* with internal reconstruction data. This file is used to validate that Encoder generated proper compressed file and that resulted bitstream is valid. All bitstreams can be decoded with the reference HEVC HM decoder with all SIMD optimizations disabled.

Changes History

Version 2.1

- Enable HEVC RExt Main 4:4:4 and 12 bit profiles
- Add new streams with RExt specific technologies
- Enable QP control for wider range
- Update parfiles to match syntax better
- Add broken streams

Version 2.0

- Major upgrade to support HEVC RExt Main 4:2:2 10 profile
- New RExt stream 501_main422_10bit with specific RExt features

Version 1.7

- Fix all streams to enable minimal possible CU and TU size for maximal CTB size
- Add new stress stream 401_memaccess
- 3840x2160 and 7680x4320 resolution streams are provided for Level 6.x

Version 1.6

Random Encoder improvements:

- Fix all Inter streams to satisfy spec requirement "The value of NumPicTotalCurr shall be less than or equal to 8"
- Fix all streams SPS values of `log2_diff_max_min_luma_transform_block_size` because maximum TU size could be greater than maximum CU size
- Implement inter-RPS prediction mode, it is now enabled in all Inter streams
- Fix all streams VPS and SPS values of `general_profile_compatibility_flag[i]`, they were set incorrectly.
- Fix all Main10 streams SPS values of `bit_depth_luma_minus8` and `bit_depth_chroma_minus8`, streams could have Main profile and bit depth greater than 8
- Added SPS and PPS range extension to all streams with all RExt features turned off
- Fix problem with parsing parfiles with Linux-style line-endings in Windows environment

Version 1.5

- Enable temporal scalability.
- Add new stream 204_temporal.
- Streams 301_intra_stress and 302_inter_stress now have temporal sub-layers.

Version 1.4

- Add bitstreams for Main10 Profile.

- IDR frames and SPS headers insert every CVS, see IRAP frequency for every stream in Description table.
- Minimal tile size restriction for Main profile is 256x64. Fix.
- For every IDR frame VPS, SPS and PPS may be completely different from previous CVS which increases number of different high level parameter combinations.
- Implement reference pic list modifications.
- Implement prediction syntax of scaling list.

System Requirements

Hardware

- Bitstreams: no limitations.
- Reference Decoder and Random Encoder: IA32, Intel® 64 Architecture processors.

Software

- Bitstreams: no limitations.
- Reference Decoder: Microsoft* Windows* 7, Microsoft Windows 8, Microsoft Windows 8.1, Microsoft Windows Server 2012 or Microsoft Windows Server 2012 R2 for 64-bit architecture, Ubuntu* 12.04 LTS for 64-bit architecture (currently 12.04.3) or SUSE* Linux* Enterprise Server 11 for 64-bit architecture, OS X 10.9 (currently 10.9.3)
- Random Encoder: Microsoft* Windows* 7, Microsoft Windows 8, Microsoft Windows 8.1, Microsoft Windows Server 2012 or Microsoft Windows Server 2012, Ubuntu* 12.04 LTS for 64-bit architecture (currently 12.04.3) or SUSE* Linux* Enterprise Server 11 for 64-bit architecture

Package Contents

Note: <install-folder> - folder where **Intel® Stress Bitstreams and Encoder 2016 - HEVC** is installed.

<install-folder>\	Contains Intel® Stress Bitstreams and Encoder 2016 - HEVC Release Notes (this file), End User License Agreement (EULA), spreadsheet with detailed description of every bitstream, history document for each bitstream, Getting started document, Using Branch and Syntax Coverage Static View document, HEVC Syntax Coverage Report and User Guide document.
<install-folder>\Branch and Syntax Coverage Static View\	Contains "Branch and Syntax Coverage Static View" report (basecov.html) for HM reference decoder

<install-folder>\decoder	Contains HEVC HM Decoder (Reference) for Windows*, Linux* and OS X* and readme file.
<install-folder>\streams	Contains compliance HEVC bitstreams , their MD5 check sums and MD5 check sums for decoding results of each encoded file.
<install-folder>\encoder	Contains HEVC Random Encoder for Windows* and Linux*.
<install-folder>\encoder\parfiles	Contains parfiles for Intel® Stress Bitstreams and Encoder 2016 – HEVC Encoder.

Installation

- Extract files from archive to the target hard drive.

Known Limitations

- 32-bit version of decoder may not be able to decode streams of high resolution. It is recommended to use 64-bit decoder for 4K and higher resolution streams.

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