Ensure Robust HEVC, VP9, and AVS 2.0 Video Decoders, Speed Debug and Validation

Intel® Stress Bitstreams and Encoder 2016 (Intel® SBE)
Video Analysis, Debug, and Validation Tools

Improve Compliance and Cut Engineering Costs and Time to Market

Intel® Stress Bitstreams and Encoder (Intel® SBE) allows you to:

- Perform extensive, production-scale media validation and debug for VP9, HEVC, and AVS 2.0 decoders, transcoders, players, and streaming solutions
- Ensure robustness and compliance of HEVC, VP9, and AVS 2.0 decoders, validate with Stress, Syntax, Error Resilience and Visual streams
- Test HEVC decoder supporting Main, Main 10, Main 12, 4:2:2, and 4:4:4 up to 12-bit profiles
- Accelerate validation cycles, reduce costs, and speed time to market
- Create custom bitstreams for testing and optimize your stream base for coverage and usage efficiency

Validation Bitstreams for HEVC and VP9 Decoders

Intel SBE includes HEVC, VP9, or AVS 2.0 video streams packaged with a unique software encoder to create custom content. Bitstreams are carefully designed for compliance, performance, and error resilience validation of VP9, HEVC, and AVS 2.0 decoders, transcoders, players, and streaming solutions. To optimize for fast test cycles, we designed stress streams which provide a small footprint and excellent syntax coverage. For quick debug if an issue is found, we provide a broad range of focused syntax stream tests. Unlike standards-compliance bitstreams, Intel SBE provides high-combinatorial coverage needed to test your decoder.

Extensive Validation Coverage for Industry Compliance

Due to the syntactical flexibility allowed in modern coding standards, video encoders are capable of producing a variety of bitstreams. A decoder (or video player) needs a way to validate against every possible encoder available, both today and in the future. It seems impossible, but there is an approach that proves to be credible. It’s a modeling of test scenarios by creating a highly configurable encoder driven by an advanced entropy model—a Random Encoder. The output of this encoder is rigorously tested for coverage of important combinations of syntax...
Intel® Stress Bitstreams and Encoder

- HEVC, VP9, and AVS 2.0 profiles supported
  - HEVC Main, Main 10, Main 12, Main 4:2:2 and 4:4:4 up to 12 bit)
  - VP9 Profiles 0, 1, 2, 3
  - AVS 2.0 Main and Main 10
- Compliance (Syntax) Streams: Ensure your decoder is compliant to standard.
- Performance and Memory Bandwidth (Stress) Streams: Test decoder under worst-case performance and memory bandwidth conditions.
- Error Resilience: Ensure decoder is robust and able to process broken and non-compliant streams.
- Visual Streams: Clean content to scan decoder output for visual artifacts by eyes.
- Smoke Test Streams: Small footprint and sufficient coverage, ideal for quick test runs.
- Random Encoders: Generate custom bitstreams for your specific test case.
- Bitstream Base Optimization and Coverage Visual Reporting Tools
- Reference Decoders and Checksums
- Detailed Coverage Report

Intel® Stress Bitstreams and Encoder is a member of the Intel® Media Server Studio product family. It can be used alone or with Intel® Media Server Studio Professional Edition and Intel® Video Pro Analyzer.

Cut Development Costs and Time to Market for Video Products

Intel carefully structured the streams to be as compact as possible during validation. (This reduces the time to validate your product.) Plus, the package contains a large number of streams to assist in debug.

You can also generate custom streams, which can be an advantage if you want to test (e.g., for syntax correctness of a filter or error resilience).

New Intel SBE developer tools give you the ability to build syntax and code branch coverage reports for any set of streams. Optimize your stream base to select only what’s needed for particular test coverage, and dynamically improve it over time.
Figure 2. Intel stress bitstreams are designed to confuse decoders. In this example, compute complexity caused by special coding elements choices looks chaotic but is legal and produces perfectly correct results.

Features

- HEVC Streams and Encoder: Syntax, Stress, Error Resilience and Visual streams for Main, Main 10, Main 12, 4:2:2, and 4:4:4 up to 12-bit
- VP9 Streams: Syntax and Stress (Profiles 0, 1, 2, 3); Error Resilience, Visual and Smoke Test streams (Profiles 0, 2)
- AVS 2.0 Streams: Syntax and Stress for Main and Main 10 profiles
- Tools: Random Encoder to build custom streams, Coverage Report to collect coverage
- Reference Decoders and Checksums
Technical Specifications

Hardware Requirements
- Intel® CPU supporting Intel® Streaming SIMD Extensions 2 (SSE2), 1GB RAM minimum
- 4 GB recommended when loading 4K pictures

Software Support
- Microsoft Windows* 7, 8, 8.1, 10, 32-bit/64-bit
- Ubuntu Linux* 12.04.64
- SUSE® Linux Enterprise Server 11–64
- Macintosh OS X® 10.9
- Encoders on Windows and Linux

Companion Tools

Intel® Media Server Studio
Create innovative, enterprise-grade media solutions that deliver fast, high-density media transcoding, speed the transition to HEVC and 4K, and reduce costs. Learn more here.

Intel® Video Pro Analyzer
Advanced video analysis software tools for HEVC, VP9, AVC, and MPEG-2 video coding standards allow deep visual inspection of the complete decoding process, extract statistics, debug, and more. Learn more here.

Learn More About Intel Stress Bitstreams and Encoder
- Download a free trial version >
- Learn more >
- Buy now >

For hardware and other technical requirements, see the latest Release Notes.

Get more information regarding performance and optimization choices in Intel® software products.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL’S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

A “Mission Critical Application” is any application in which failure of the Intel Product could result, directly or indirectly, in personal injury or death. SHOULD YOU PURCHASE OR USE INTEL’S PRODUCTS FOR ANY SUCH MISSION CRITICAL APPLICATION, YOU SHALL INDEMNIFY AND HOLD INTEL AND ITS SUBSIDIARIES, SUBCONTRACTORS, AND AFFILIATES, AND THE DIRECTORS, OFFICERS, AND EMPLOYEES OF EACH, HARMLESS AGAINST ALL CLAIMS COSTS, DAMAGES, AND EXPENSES AND REASONABLE ATTORNEYS’ FEES ARISING OUT OF, DIRECTLY OR INDIRECTLY, ANY CLAIM OF PRODUCT LIABILITY, PERSONAL INJURY, OR DEATH ARISING IN ANY WAY OUT OF SUCH MISSION CRITICAL APPLICATION, WHETHER OR NOT INTEL OR ITS SUBCONTRACTOR WAS NEGLIGENT IN THE DESIGN, MANUFACTURE, OR WARNING OF THE INTEL PRODUCT OR ANY OF ITS PARTS.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked “reserved” or “undefined.” Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information. The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark* and MobileMark*, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order. Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or go to: http://www.intel.com/design/literature.htm

The TCO or other cost reduction scenarios described in this document are intended to enable you to get a better understanding of how the purchase of a given Intel product, combined with a number of situation-specific variables, might affect your future cost and savings. Nothing in this document should be interpreted as either a promise of or contract for a given level of costs. Copyright © 2016 Intel Corporation. All rights reserved, Intel and the Intel logo, are trademarks of Intel Corporation in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.

Printed in USA  121715/BC/V9/SS  Please Recycle  328851-003US PDF