

Decoder Validation Kit (DVK)

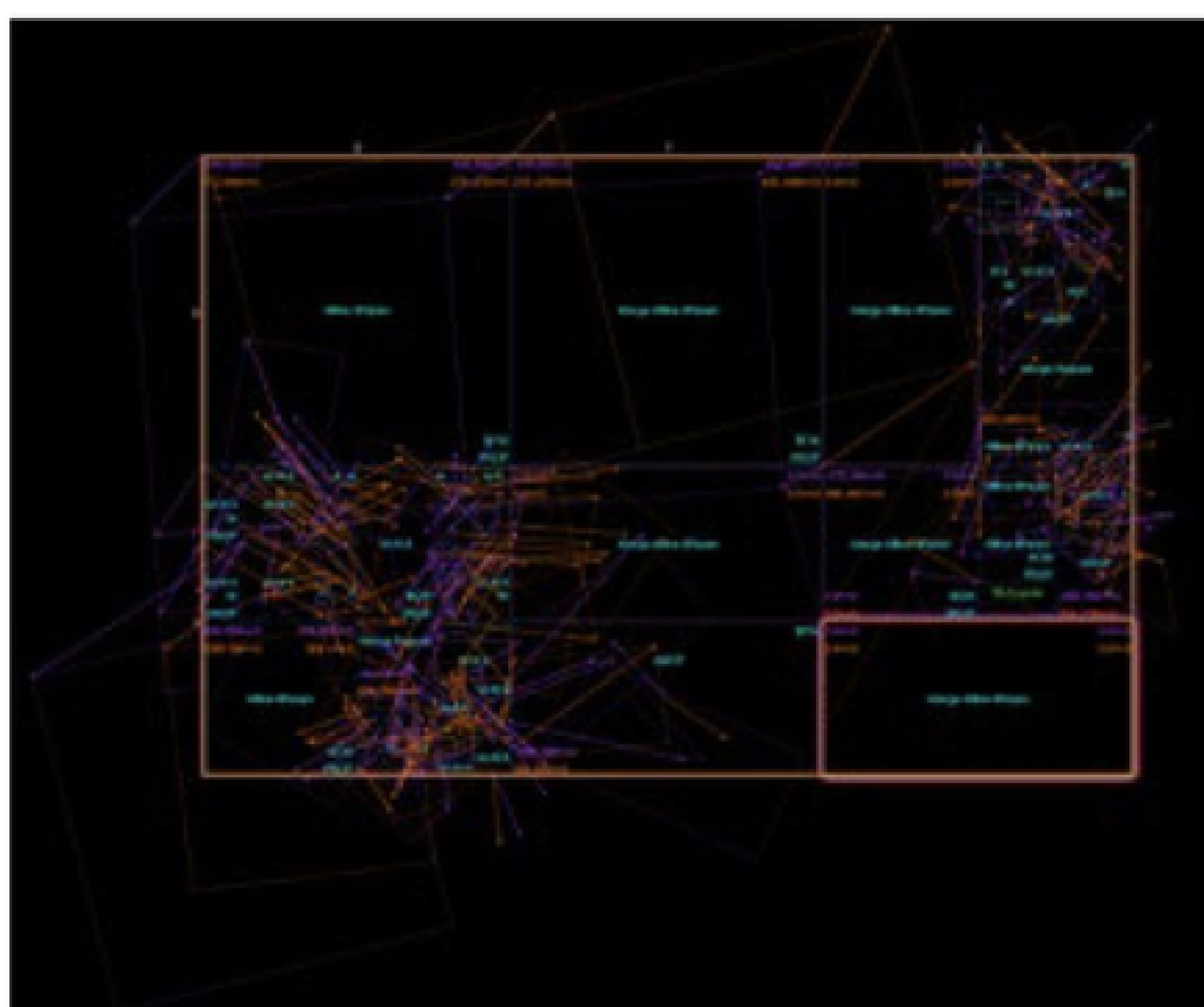


#DESIGN
#VALIDATE
#IMPROVE

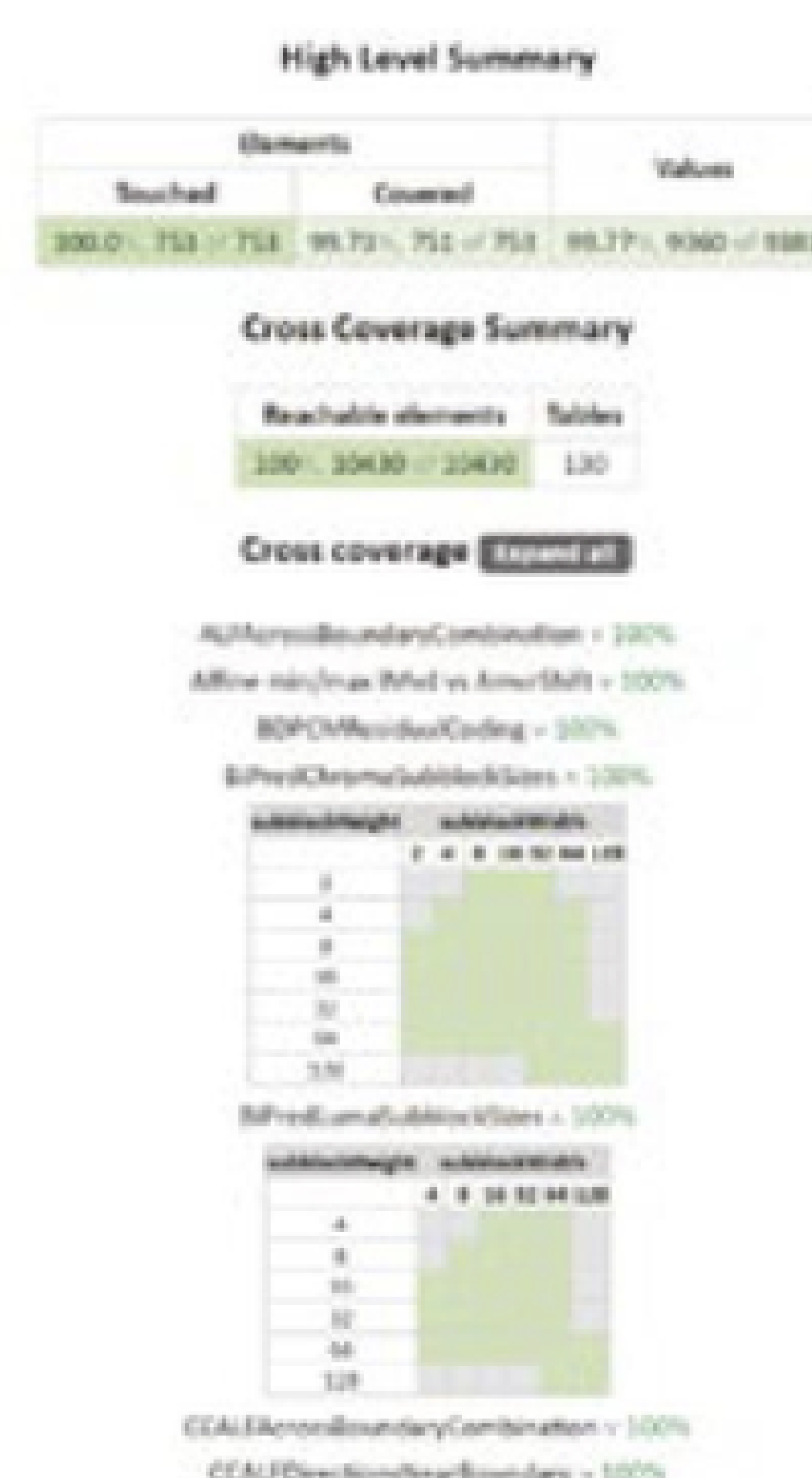
DVK is a Bitstreams and software toolchain for Decoder IP design and compliance validation. It is a must have tool for chip RTL design, target appliance integration (such as a smartphone, smart TV, Set Top Box), software stack verification before customer shipment. It is carefully structured to be as compact as possible, to address maximum coverage and minimize validation time during design process. Save weeks, potentially months of work needed for validation and ship quality with decoders for improved competitiveness reducing time-to-market. Ensure that Integrated decoder IP satisfies target requirements ahead of product delivery!

DVK is:

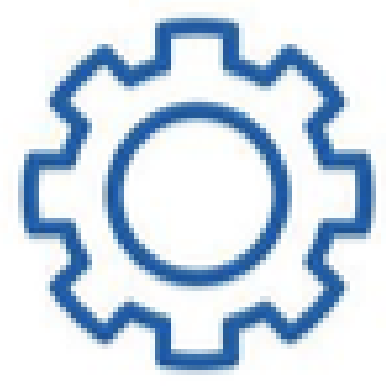
- » A Video Decoder Certification
- » A comprehensive set of test bitstreams, a configurable encoder and analytics tool to verify a decoder compliance to a standard
- » A powerful validation environment for VVC, AV1, HEVC, VP9 decoder developers
- » A tool which allows to compare test decoder's output with «known correct» results
- » An instrument to determine anomalies in decoder design to save validation and support costs



Performance bitstream maximises memory access bandwidth.
A Hevc bitstream view in VQ Analyzer



Syntax coverage report



Technical features

» VVC BITSTREAMS

Syntax - handy tiny size (small resolution and 1-2 frames only) to maximize coverage of each syntax element and cross-coverage of essential pairs. One test stream - one feature, make individual «coding block» design independently. Good for initial RTL design.

Stress - include all the features covered by the Syntax streams, in higher resolution and more frames. Good for an advanced stage of decoder design.

Performance - test the limits of hardware decoder's speed. Good for final validation to prove compliance to Level requirements.

Error resilience - set of non-fully-compliant bitstreams to test decoder's robustness to errors and ability to recover. Good for final validation to deliver viable end user product.

	Main 10 profile (8,9,10 bit, mono/420)	Main 10 444 profile (8/9/10bit, mono/420/422/ 444)	Multilayer Main 10 profile (8/9/10bit, mono/420)	Multilayer Main 10 444 profile (8/9/10bit, mono/420/422/ 444)
	1164 streams	2263 streams	1632 streams	3199 streams
	280 streams	280 streams	-	-
	39 streams	42 streams	-	-
	213 streams	15 streams	-	-

» AVS3 BITSTREAMS

Syntax - handy tiny size (small resolution and 1-2 frames only) to maximize coverage of each syntax element and cross-coverage of essential pairs. One test stream - one feature, make individual «coding block» design independently. Good for initial RTL design.

Stress - include all the features covered by the Syntax streams, in higher resolution and more frames. Good for an advanced stage of decoder design.

Performance - test the limits of hardware decoder's speed. Good for final validation to prove compliance to Level requirements.

Error resilience - set of non-fully-compliant bitstreams to test decoder's robustness to errors and ability to recover. Good for final validation to deliver viable end user product.

	Main 8bit profile (8bit, 420)	Main 10bit profile (8/10bit, 420)	High 8bit profile (8bit, 420)	High 10bit profile (8/10bit, 420)
	200 streams	400 streams	425 streams	850 streams
	36 streams	72 streams	36 streams	72 streams
	400 streams	800 streams	1656 streams	3312 streams
	0 streams	0 streams	0 streams	0 streams

* - Stream counters can change, since product is under development

» AV1 BITSTREAMS

Syntax - bitstreams to maximize coverage of each syntax element and cross-coverage of essential pairs. One test streams - one feature, make individual «coding block» design independently. Good for RTL design.

Stress - include all the features covered by the Syntax streams, combined together. Good for the advanced stage of decoder design.

Performance - test the limits of hardware decoder's speed. Good for final validation to prove compliance to Level requirements.

Error resilience - set of non-fully-compliant bitstreams to test decoder's robustness to errors and ability to recover. Good for final validation to deliver viable end user product.

Main profile
(8/10bit,
mono/420)

288 streams

28 streams

21 streams

130 streams

High profile
(8/10bit,
mono/420/444)

410 streams

14 streams

42 streams

65 streams

Professional profile
(8/10/12bit,
mono/420/422/444)

534 streams

14 streams

42 streams

65 streams

» HEVC BITSTREAMS

Syntax - bitstreams to maximize coverage of each syntax element and cross-coverage of essential pairs. One test streams - one feature, make individual «coding block» design independently. Good for RTL design.

Stress - include all the features covered by the Syntax streams, combined together. Good for the advanced stage of decoder design.

Performance - test the limits of hardware decoder's speed. Good for final validation to prove compliance to Level requirements.

Error resilience - set of non-fully-compliant bitstreams to test decoder's robustness to errors and ability to recover. Good for final validation to deliver viable end user product.

Main profile
(8bit, 420)

93 streams

12 streams

21 streams

144 streams

Main10
(10bit, 420)

101 streams

11 streams

18 streams

144 streams

REXT
(8/10/12bit, Mono/
422/444)

282 streams

28 streams

63 streams

144 streams

» VP9 BITSTREAMS

Syntax - bitstreams to maximize coverage of each syntax element and cross-coverage of essential pairs. One test streams - one feature, make individual «coding block» design independently. Good for RTL design.

Stress - include all the features covered by the Syntax streams, combined together. Good for the advanced stage of decoder design.

Performance - test the limits of hardware decoder's speed. Good for final validation to prove compliance to Level requirements.

Error resilience - set of non-fully-compliant bitstreams to test decoder's robustness to errors and ability to recover. Good for final validation to deliver viable end user product.

	Profile 0 (8bit, 420)	Profile 1 (8bit, 422/440/444)	Profile 2 (10/12bit, 420)	Profile 3 (10/12bit, 422/440/444)
Syntax	60 streams	78 streams	120 streams	156 streams
Stress	18 streams	30 streams	36 streams	60 streams
Performance	21 streams	63 streams	36 streams	108 streams
Error resilience	20 streams	60 streams	52 streams	156 streams

» AVC/H264 BITSTREAMS

Syntax - handy tiny size (small resolution and 1-2 frames only) to maximize coverage of each syntax element and cross-coverage of essential pairs. One test stream - one feature, make individual «coding block» design independently. Good for initial RTL design.

Stress - include all the features covered by the Syntax streams, in higher resolution and more frames. Good for an advanced stage of decoder design.

Performance - test the limits of hardware decoder's speed. Good for final validation to prove compliance to Level requirements.

Error resilience - set of non-fully-compliant bitstreams to test decoder's robustness to errors and ability to recover. Good for final validation to deliver viable end user product.

	High (8bit, mono/420)	High 10 (8/9/10 bit, mono/420)	High 422 (8/9/10 bit, mono/420/422)	High 444 Predictive (8/9/10 bit, mono/420/422/4 44)
Syntax	807 streams	1616 streams	2262 streams	2984 streams
Stress	0 streams	0 streams	0 streams	0 streams
Performance	0 streams	0 streams	0 streams	0 streams
Error resilience	0 streams	0 streams	0 streams	0 streams