

The background is a solid green color with a repeating pattern of white line-art icons. These icons include various nautical items like anchors, lifebuoys, and seashells, as well as outdoor and travel-related items like a compass, a map, a camera, and a bird in flight. The icons are scattered across the entire slide.

MEDIATEK

JVET-K0556

CE1-related: Constraint for binary and ternary partitions

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Virtual Pipeline Data Unit (VPDU)

- VPDUs are non-overlapping $M \times M$ -luma(L)/ $N \times N$ -chroma(C) units in a picture.
- In hardware decoders, successive VPDUs are processed by multiple pipeline stages at the same time; different stages process different VPDUs simultaneously.
- The VPDU size is roughly proportional to the buffer size in most pipeline stages, so it is very important to keep it small.
- VPDU size can be set to maximum transform block (TB) size for HEVC hardware decoding.

Problem Definition

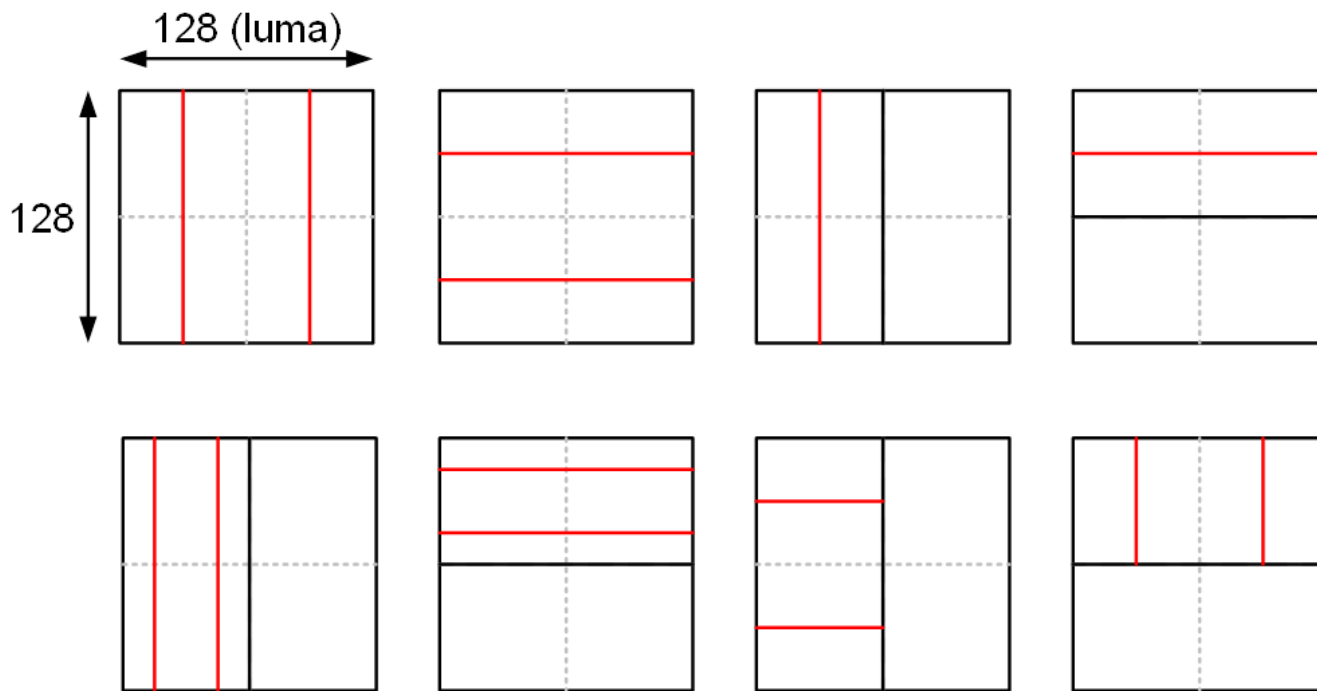
- Enlarging maximum TB size from 32x32-L/16x16-C to 64x64-L/32x32-C leads to expected VPDU size equal to 64x64-L/32x32-C.
- However, ternary tree (TT) and binary tree (BT) will result in VPDU size equal to 128x128-L/64x64-C.
- To reduce VPDU size to 64x64-L/32x32-C, one constraint is proposed.

Proposed Method

- Definition of VPDUs: non-overlapping 64x64-L/32x32-C units in a picture
- Condition 1: For each VPDU containing one or multiple CUs, the CUs are completely contained in the VPDU.
- Condition 2: For each CU containing one or more VPDUs, the VPDUs are completely contained in the CU.
- Proposed constraint: For each CTU, the above two conditions shall not be violated, and the processing order of CUs shall not leave a VPDU and re-visit it later.

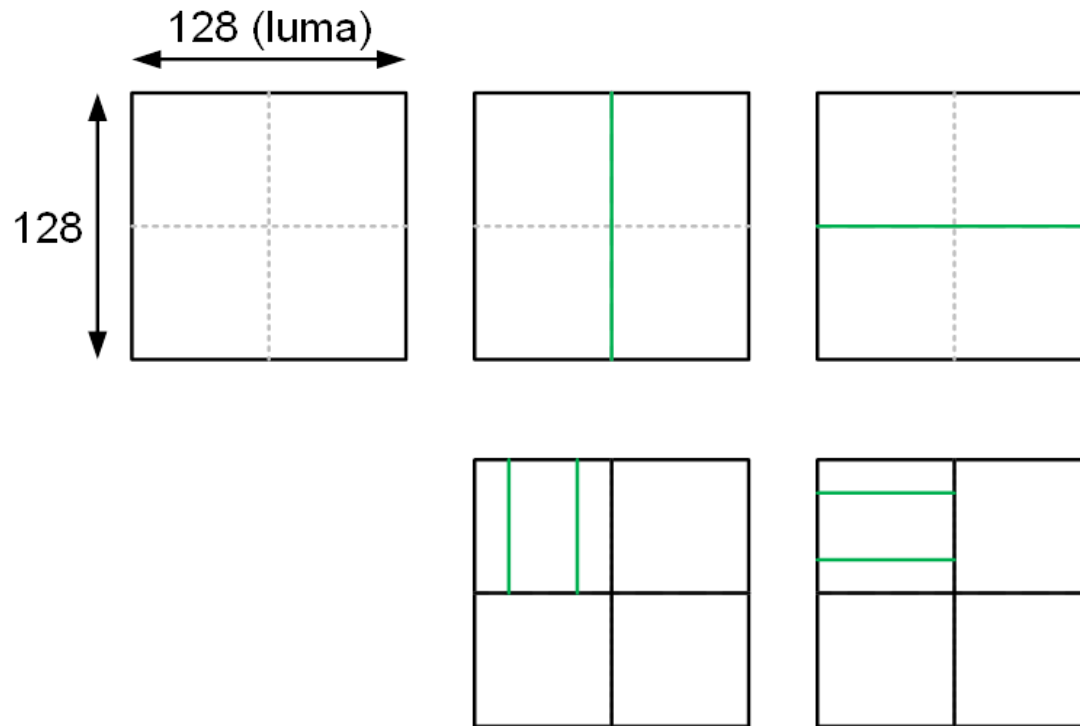
TT and BT Splits Bad for 64x64-L/32x32-C Pipelining

- CTU size: 128x128-luma/64x64-chroma
- VPDU size: 64x64-luma/32x32C (indicated by dashed lines)



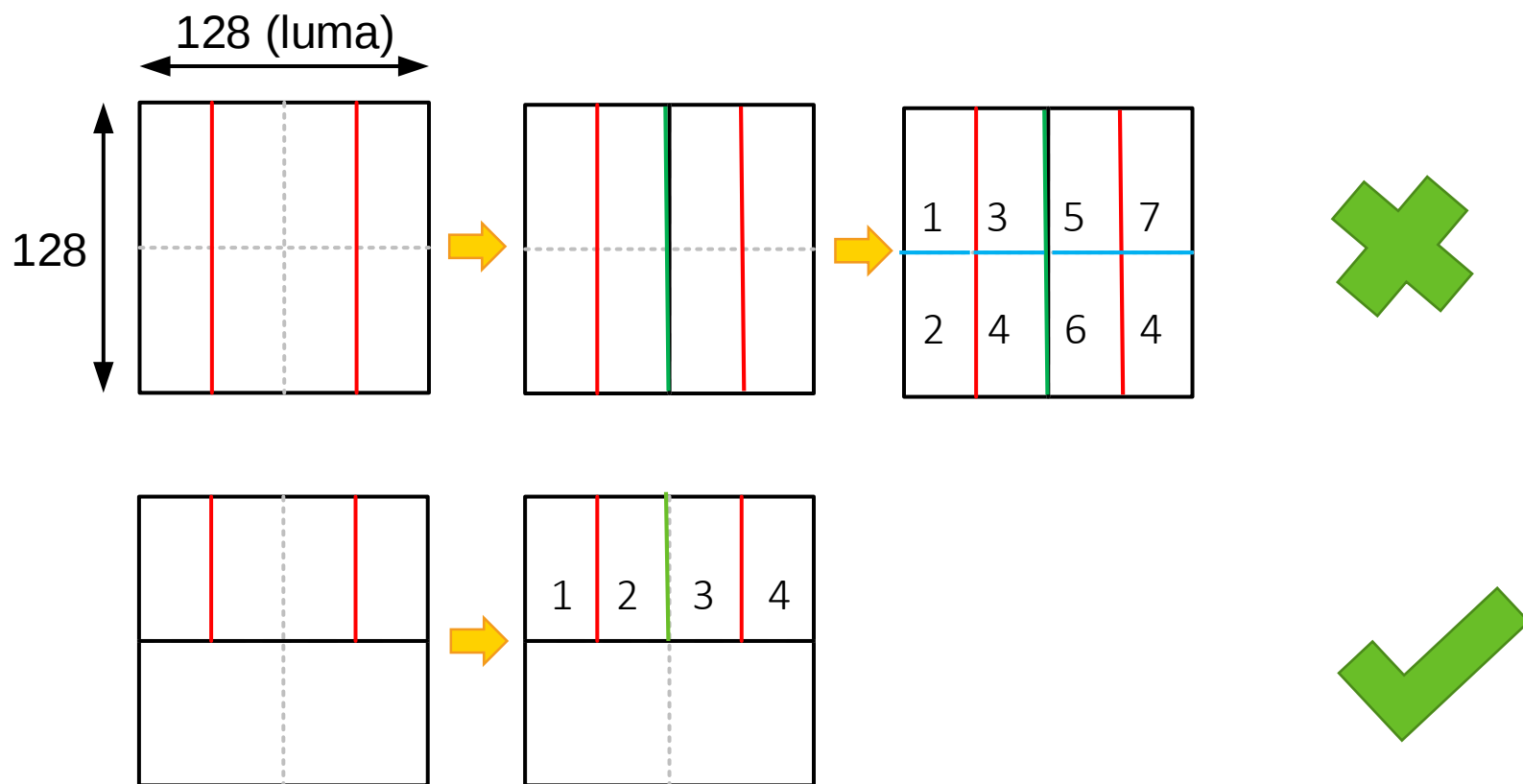
TT and BT Splits Good for 64x64-L/32x32-C Pipelining

- (VPDUs indicated by dashed lines)



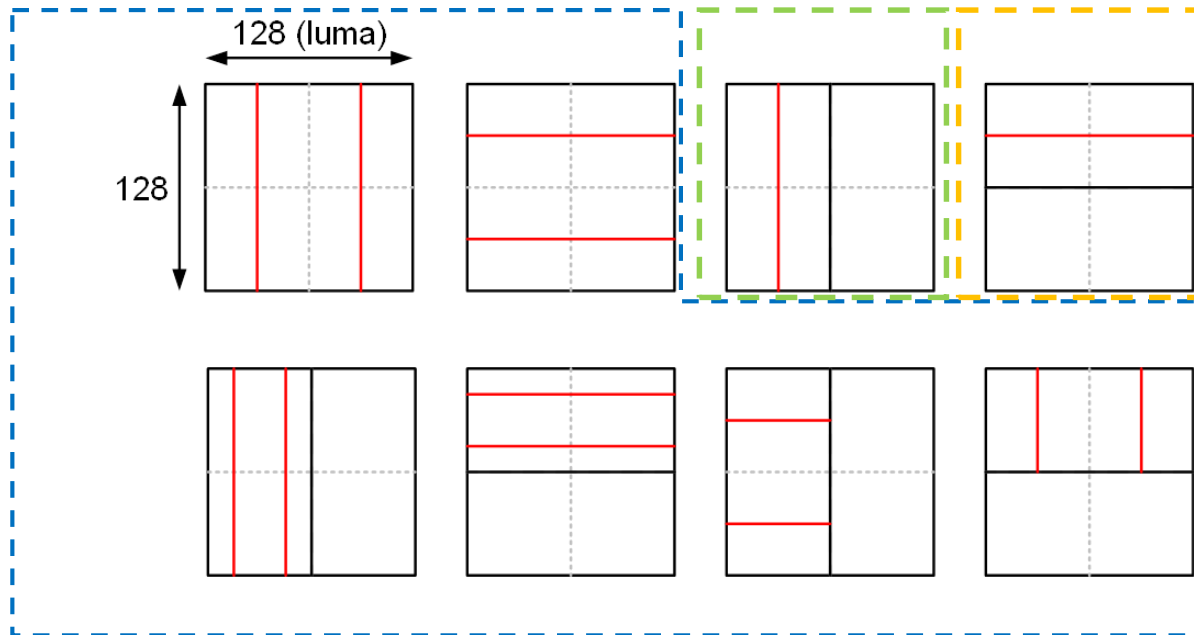
Case Study

- Two forbidden ternary splits followed by more potential splits make two different results



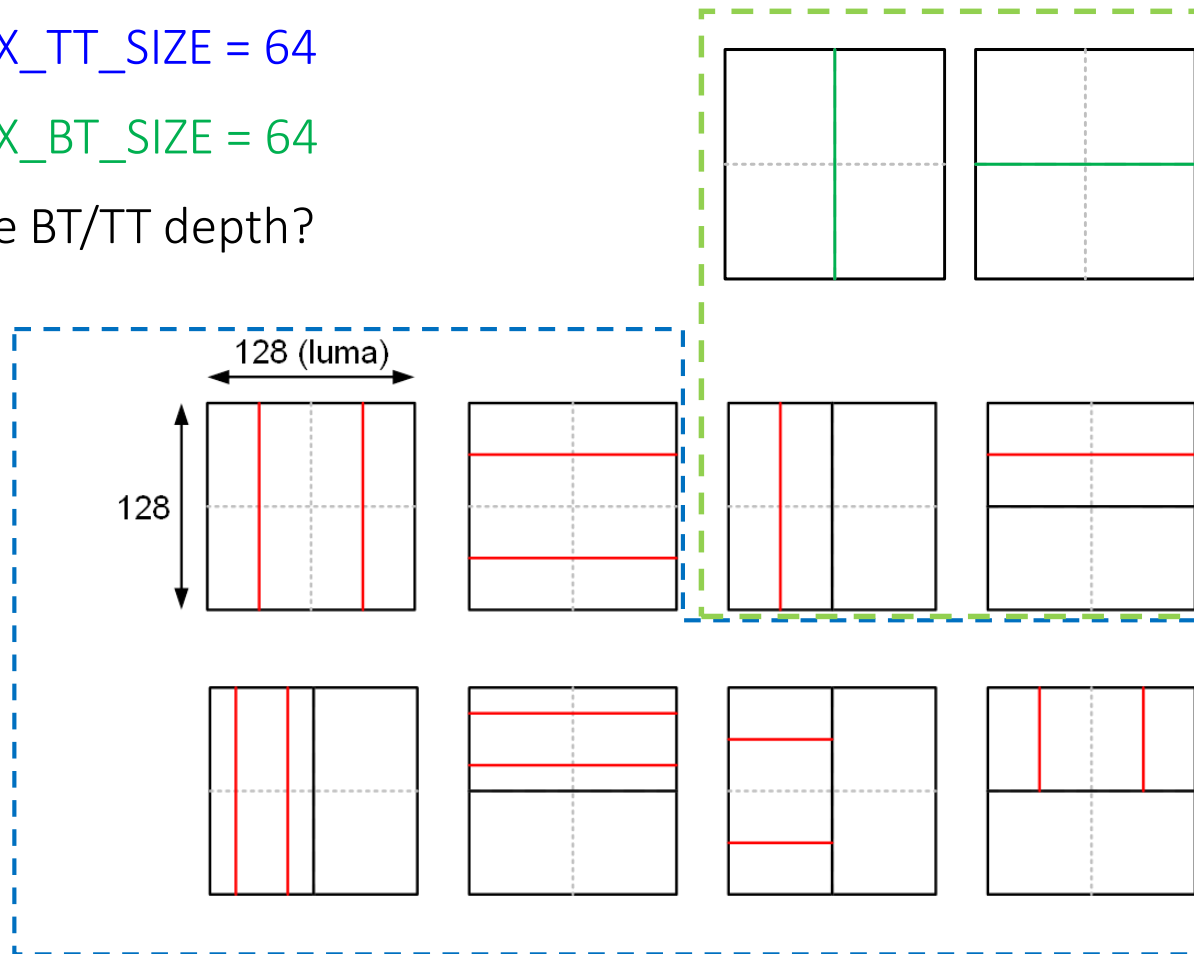
Syntax Constraints (I)

- Prohibit ternary split of edges longer than 64
- Prohibit vertical binary split when width is 64 and height is 128
- Prohibit horizontal binary split when width is 128 and height is 64



Syntax Constraints (II)

- Set MAX_TT_SIZE = 64
- Set MAX_BT_SIZE = 64
- Increase BT/TT depth?



Suggestions

- Adopt the proposed constraint to replace the ternary tree constraint statement “Prohibit ternary split of edges longer than 64”
 - Suggest to elaborate the description of the constraint by the group
- Recommend encoder/decoder implementation for CE