



CE4 Subset1: Leaf-CU-Aligned Slices

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Overall Summary

- This contribution reported the results of CE4 Subset1
- LCU-aligned slices reportedly better than leaf-CU-aligned slices

1500 bytes per slice Anchor: JCTVC-D600	BD-rate (%)			Bit Rate Inaccuracy (%)		
	HE-AI	HE-RA	HE-LD	HE-AI	HE-RA	HE-LD
LCU-aligned, 64x64-LCU	4.9	4.3	2.5	12.3	8.4	5.6
LCU-aligned, 32x32-LCU	6.6	7.2	5.7	3.8	3.0	2.7
LCU-aligned, 16x16-LCU	10.6	18.0	18.4	1.2	1.5	1.6
Leaf-CU-aligned	5.3	4.5	2.6	2.0	2.5	3.0

- The unified end-of-slice detection in JCTVC-E042 reportedly better than the 2-level end-of-slice signaling in JCTVC-D127

BD-rate (%)	HE-AI	LC-AI	HE-RA	LC-RA	HE-LD	LC-LD
JCTVC-D127	5.3	5.8	4.6	4.4	2.7	2.5
JCTVC-E042	5.3	5.8	4.5	4.4	2.6	2.5

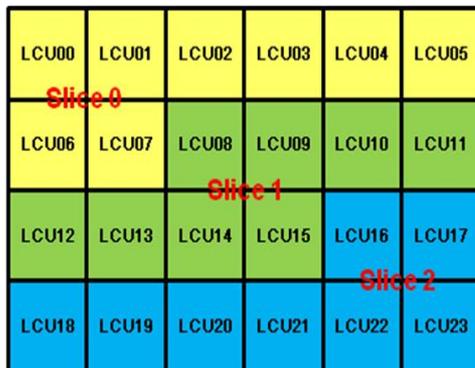
Outlines

- Introduction
- Tested algorithms
- Simulation results
- Conclusions

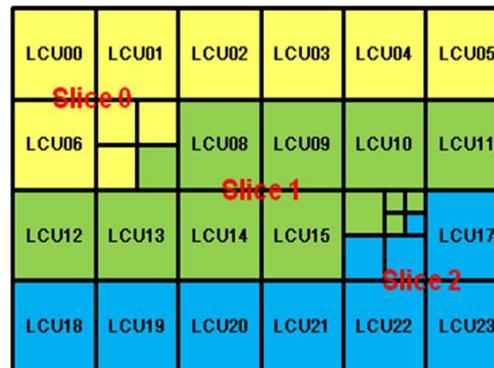
Introduction

- In the current HEVC, one picture can be partitioned into multiple LCU-aligned slices
- In JCTVC-D127, it was proposed to use leaf-CU-aligned slices

LCU-aligned slices



Leaf-CU-aligned slices



Tested Algorithms

- LCU-aligned slices
 - Target number of bytes per slice is 1500
 - Test different LCU sizes from 64x64 to 16x16
 - Evaluate the impact of the LCU size on coding efficiency
 - The bit rate inaccuracy is calculated for reference

$$inaccuracy(\%) = \left| \frac{(\text{Real coded bytes} - \text{Target bytes})}{\text{Target bytes}} \times 100 \right|$$

- Leaf-CU-aligned slices
 - Target number of bytes per slice is 1500
 - Test the 2-step end-of-slice signaling in JCTVC-D127
 - Test the unified end-of-slice detection in JCTVC-E042, which was modified from JCTVC-D383
 - Use BD-rate and bit rate inaccuracy for evaluation

Simulation Results (1/2)

- LCU-aligned slices: HM-2.0-dev-slices (rev 609)
- Leaf-CU-aligned slices: MediaTek's software based on HM-2.0

1500 bytes per slice Anchor: JCTVC-D600	BD-rate (%)			Bit Rate Inaccuracy (%)		
	HE-AI	HE-RA	HE-LD	HE-AI	HE-RA	HE-LD
LCU-aligned, 64x64-LCU	4.9	4.3	2.5	12.3	8.4	5.6
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LCU-aligned, 16x16-LCU	10.6	18.0	18.4	1.2	1.5	1.6
Leaf-CU-aligned	5.3	4.5	2.6	2.0	2.5	3.0

- Leaf-CU-aligned slices better than LCU-aligned slices**

Simulation Results (2/2)

- MediaTek 's software based on HM 2.0
- Leaf-CU-aligned 1500-byte slices
- Anchor: JCTVC-D600
- Test the 2-step end-of-slice signaling in JCTVC-D127 and the unified end-of-slice detection in JCTVC-E042

BD-rate (%)	HE-AI	LC-AI	HE-RA	LC-RA	HE-LD	LC-LD
JCTVC-D127	5.3	5.8	4.6	4.4	2.7	2.5
JCTVC-E042	5.3	5.8	4.5	4.4	2.6	2.5

- The unified end-of-slice detection better than the 2-step end-of-slice signaling**

Conclusions

- CE4 Subset1 experiments were conducted for both LCU-aligned and leaf-CU-aligned 1500-byte slices
- Suggest to adopt the leaf-CU-aligned slices for better coding efficiency and lower bit rate inaccuracy than the LCU-aligned slices
- Suggest to adopt the unified end-of-slice detection than the 2-step end-of-slice signaling due to better coding efficiency and lower design complexity

MEDIA TEK

Thank you

