



Non-CE12

**Simplified BS Calculation
Process in Deblocking Filter
(JCTVC-G176)**



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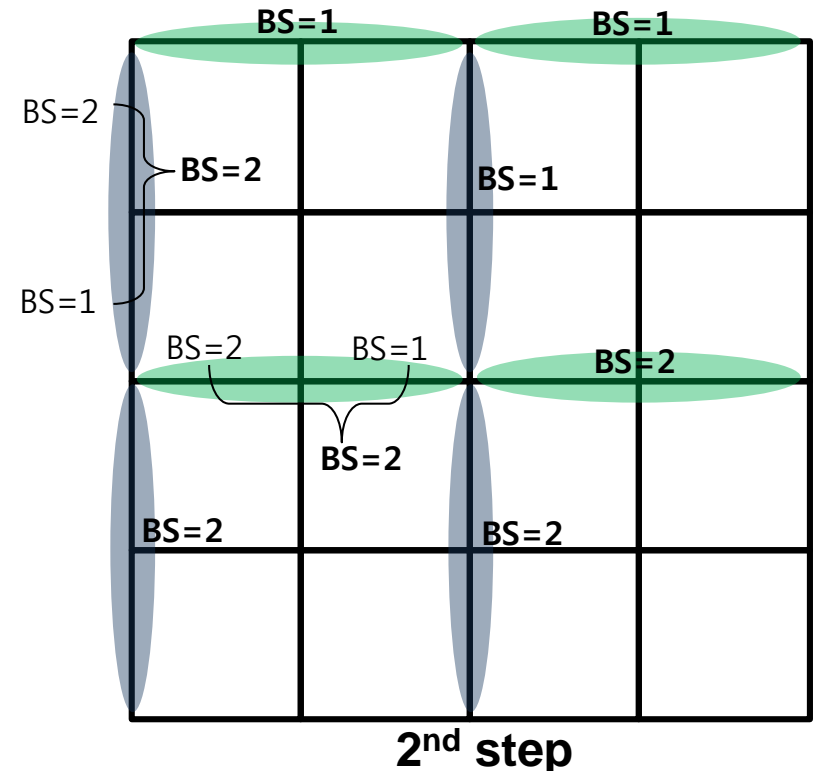
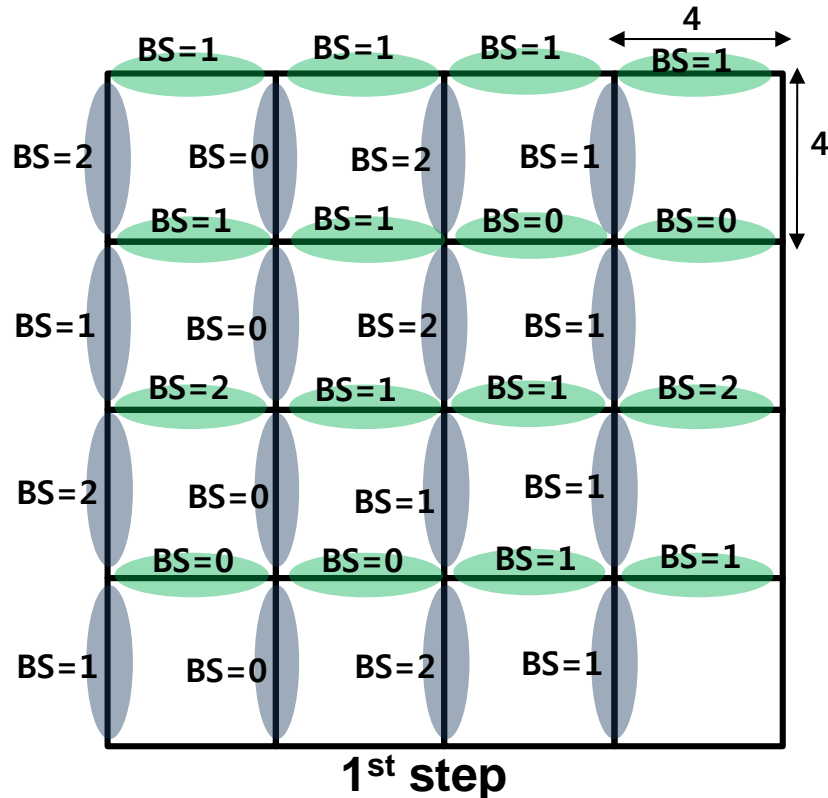
Overall Summary

- **Simplifying BS (boundary strength) decision process**
 - Changing minimum unit size of BS decision from 4x4 to 8x8
 - Removing BS unification process for 8x8 block edge
- **Performance**
 - No objective and subjective performance degradation
 - Achieving the consistency between BS and filtering unit

Anchor: JCTVC-F900	AI		RA		LD	
	HE	LC	HE	LC	HE	LC
BD-Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Encoding time	100%	100%	100%	100%	100%	100%
Decoding time	99%	99%	99%	98%	99%	99%

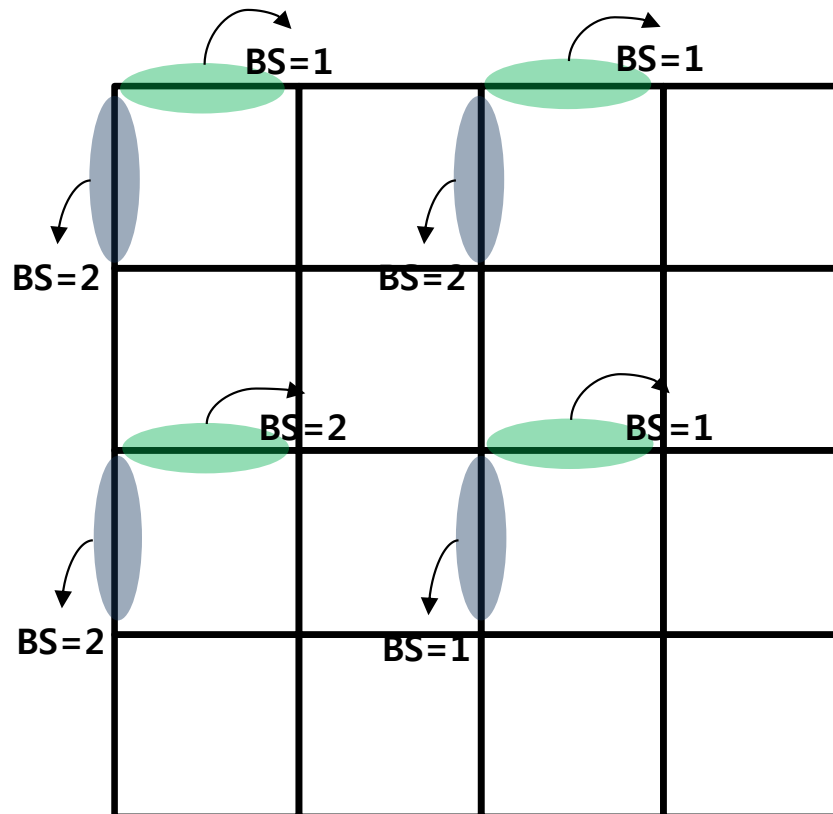
Current BS Decision Process

- **1st step: BS decision process for every 4x4 block edge**
 - For TU / PU boundary edge, one of 0~4 is allocated depending on conditions
 - For other edges, BS=0 is allocated
- **2nd step: BS unification for 8x8 block edge**
 - Comparing two adjacent BS values and choosing the bigger one
 - *Due to the minimum unit size difference between BS and filtering*



Proposed method

- **Unification of BS decision processes into one step**
 - BS decision is performed in the first 4x4 edge only within a 8x8 unit
 - Used for the filtering on/off decision for 8x8 edge
 - Providing the complexity reduction
 - Skipping BS decision process in every 4x4 edge
 - Skipping additional BS unification process



Simulation results

- Anchor: HM 4.0 with JCTVC-F900 common test conditions
- Avg 0% BD rate compared with anchor
- No visual artifact found by informal visual test
- We thank MediaTek (JCTVC-G675) for crosscheck

Anchor: JCTVC-F900	HE-AI			HE-RA			HE-LB		
	Y	Cb	Cr	Y	Cb	Cr	Y	Cb	Cr
BD-Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Encoding time	100%			100%			100%		
Decoding time	99%			99%			99%		

Anchor: JCTVC-F900	LC-AI			LC-RA			LC-LB		
	Y	Cb	Cr	Y	Cb	Cr	Y	Cb	Cr
BD-Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
Encoding time	100%			100%			100%		
Decoding time	99%			98%			99%		

- **Proposed to simplify BS decision process**
 - Unifying the minimum unit size of BS decision and filtering process
 - Decreased the number of BS decision process performing
 - Removed the additional BS unifying process
- **Performance**
 - Avg 0% BD-rate and no visual quality change
- **Recommend to adopt to the next draft**