

Design Consideration For Compatibility With AVC NAL Units.

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Panasonic ideas for life

- HEVC NAL units
- Possible Use Case Of AVC + HEVC hybrid coding
- Suggestion

- In the current HEVC WD 2.0, HEVC coded data are contained in NAL units similar to AVC design.
- The structure of the NAL unit header is similar as AVC where the first byte contains **forbidden_zero_bit**, **nal_ref_idc** and **nal_unit_type** information.
- One possible design consideration for HEVC NAL units is the support for the functionality to be compatible to AVC NAL units.
- At least, HEVC NAL units can be differentiated from AVC NAL units if they co-exist in the same stream.

- AVC standard is widely used today in several applications.
- One of the possible use cases for HEVC is to extend the functionalities of today's AVC applications with better compression gain.

An example of a coded stream with both AVC NAL unit and HEVC NAL unit:

AVC NAL unit	HEVC NAL unit	AVC NAL unit	HEVC NAL unit
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- Basic services with legacy players
 - *When decoding such a coded stream, legacy AVC decoder will only decode the AVC NAL units.*
- Enhanced services with new players
 - *When decoding such a coded stream, AVC+HEVC decoder will decode both AVC and HEVC NAL units to provide additional functionality with improved coding efficiency.*

- The AVC standard still have some reserved NAL unit type values. They are NAL unit type values 16, 17, 18, 21, 22, 23 (Total = 6). It is not enough to define new NAL units for HEVC.
- In the 4th JCT-VC meeting in Daegu, JCTVC-D080 by Huawei provides a suggestion to extend the nal_unit_type from five bits to six bits. The extended nal unit type values may be sufficient for new HEVC NAL units. But it is still unclear at this stage of the standardization.
- At least, we suggest JCTVC to consider the compatibility aspect in the new HEVC NAL unit design.
- One simple design is to use an AVC reserved NAL unit type to differentiate HEVC NAL unit from AVC NAL unit when they co-exist in the same stream.