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| *Title:* | **AHG9: On fixed\_pic\_rate\_flag** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

According to the current semantics of fixed\_pic\_rate\_flag cannot be set to 1 if the bitstream of the coded video sequence is temporally scalable. This is because that it is required that the delta between the output times of two pictures continuous in output order is equal to the clock tick when fixed\_pic\_rate\_flag is equal to 1. A fix to this problem is proposed in this document.

# Proposal

The proposal is based on the HRD syntax and semantics in JCTVC-J0548 ("AHG10: VUI and HRD syntax designs agreed by the BoG on VPS and NUH") and the specification of HighestTemporalId in the BoG output text ("AHG10: NUH, VPS and SPS syntax designs agreed by the BoG on VPS and NUH") attached to JCTVC-J0550 ("BoG report on VPS and NAL unit header").

Highlighted in yellow and ~~red strikethroughs~~ are additions and removals in relative to JCTVC-J0548, respectively.

HRD parameters syntax and semantics

|  |  |
| --- | --- |
| hrd\_parameters( commonInfPresentFlag, MaxNumSubLayersMinus1 ) { | Descriptor |
| if( commonInfPresentFlag ) { |  |
| **timing\_info\_present\_flag** | u(1) |
| if( timing\_info\_present\_flag ) { |  |
| **num\_units\_in\_tick** | u(32) |
| **time\_scale** | u(32) |
| **fixed\_pic\_rate\_flag** | u(1) |
| } |  |
| **nal\_hrd\_parameters\_present\_flag** | u(1) |
| **vcl\_hrd\_parameters\_present\_flag** | u(1) |
| if( nal\_hrd\_parameters\_present\_flag | | vcl\_hrd\_parameters\_present\_flag ){ |  |
| **low\_delay\_hrd\_flag** | u(1) |
| **sub\_pic\_cpb\_params\_present\_flag** | u(1) |
| if( sub\_pic\_cpb\_params\_present\_flag ) |  |
| **num\_units\_in\_sub\_tick** | u(32) |
| **bit\_rate\_scale** | u(4) |
| **cpb\_size\_scale** | u(4) |
| **cbr\_flag** | u(1) |
| **initial\_cpb\_removal\_delay\_length\_minus1** | u(5) |
| **cpb\_removal\_delay\_length\_minus1** | u(5) |
| **dpb\_output\_delay\_length\_minus1** | u(5) |
| **time\_offset\_length** | u(5) |
| } |  |
| } |  |
| ~~if( nal\_hrd\_parameters\_present\_flag | | vcl\_hrd\_parameters\_present\_flag )~~ |  |
| for( i = 0; i <= MaxNumSubLayersMinus1; i++ ) { |  |
| if( fixed\_pic\_rate\_flag ) |  |
| **pic\_duration\_in\_tc\_minus1**[ i ] | ue(v) |
| if( nal\_hrd\_parameters\_present\_flag ) |  |
| hrd\_parameters\_sub\_layer( i ) |  |
| if( vcl\_hrd\_parameters\_present\_flag ) |  |
| hrd\_parameters\_sub\_layer( i ) |  |
| } |  |
| } |  |

|  |  |
| --- | --- |
| hrd\_parameters\_sub\_layer( tId ) { | Descriptor |
| **cpb\_cnt\_minus1** | ue(v) |
| for( SchedSelIdx = 0; SchedSelIdx <= cpb\_cnt\_minus1; SchedSelIdx++ ) { |  |
| **bit\_rate\_value\_minus1[** SchedSelIdx **]** | ue(v) |
| **cpb\_size\_value\_minus1[** SchedSelIdx **]** | ue(v) |
| } |  |
| } |  |

**fixed\_pic\_rate\_flag** equal to 1 indicates that the temporal distance between the HRD output times of any two consecutive pictures in output order is constrained as follows. fixed\_pic\_rate\_flag equal to 0 indicates that no such constraints apply to the temporal distance between the HRD output times of any two consecutive pictures in output order.

When fixed\_pic\_rate\_flag is not present, it is inferred to be equal to 0.

When fixed\_pic\_rate\_flag is equal to 1 for a coded video sequence containing picture n, the value computed for Δto,dpb( n ) as specified in Equation C‑13 shall be equal to tc\*pic\_duration\_in\_tcs\_minus1[ HighestTemporalId ], wherein tc is as specified in Equation C‑1 (using the value of tc for the coded video sequence containing picture n) when one or more of the following conditions are true for the following picture nn that is specified for use in Equation C‑13:

– picture nn is in the same coded video sequence as picture n.

– picture nn is in a different coded video sequence and fixed\_pic\_rate\_flag is equal to 1 in the coded video sequence containing picture nn, the value of num\_units\_in\_tick ÷ time\_scale is the same for both coded video sequences, and the value of pic\_duration\_in\_tc\_minus1[ HighestTemporalId ] is the same for both coded video sequences.

**pic\_duration\_in\_tc\_minus1**[ i ] plus 1 specifies, when HighestTemporalId is equal to i, the temporal distance, in clock ticks, between the HRD output times of any two consecutive pictures in output order in the coded video sequence. The value of pic\_duration\_in\_tc\_minus1[ i ] shall be in the range of 0 to 2047, inclusive.

# Patent rights declaration(s)

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