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| --- | --- | --- | --- |
| *Title:* | **Depth intra skip coding (DISC) mode** | | |
| *Status:* | Input document | | |
| *Purpose:* | Proposal | | |
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# Proposed Text

I. 7.3.6.1 General slice segment header syntax

|  |  |
| --- | --- |
| ... |  |
| if( nuh\_layerId > 0 && DepthFlag && !MvHevcCompatibilityFlag ) |  |
| **depth\_intra\_skip\_coding\_enable\_flag** | u(1) |
| **...** |  |

**depth\_intra\_skip\_coding\_enable\_flag**equal to 1 specifies that the depth intra skip coding mode is enabled for the current slice. depth\_intra\_skip\_coding\_enable\_flag equal to 0 specifies that the depth intra skip coding mode is disabled for the current slice. When not present, the value of depth\_intra\_skip\_coding\_enable\_flag is inferred to be equal to 0.

I.7.3.8.5 Coding unit syntax

|  |  |
| --- | --- |
| … |  |
| if( cu\_skip\_flag[ x0 ][ y0 ] ) |  |
| prediction\_unit( x0, y0, nCbS, nCbS ) |  |
| else if( slice\_single\_sample\_mode\_enable\_flag ) |  |
| **disc\_flag**[ x0 ][ y0 ] | ae(v) |
| if( !cu\_skip\_flag[ x0 ][ y0 ] && !disc\_flag[ x0 ][ y0 ] ) { |  |
| … |  |
| if( !cu\_skip\_flag[ x0 ][ y0 ] && !disc\_flag [ x0 ][ y0 ]   && !sdc\_flag[ x0 ][ y0 ] && !pcm\_flag[ x0 ][ y0 ] ) { | ae(v) |
| … |  |

**disc\_flag**[ x0 ][ y0 ] equal to 1 specifies that the depth intra skip coding mode is used for the current coding unit. disc\_flag[ x0 ][ y0 ] equal to 0 specifies that the depth intra skip coding mode is not used for the current coding unit. When not present, the value of disc\_flag[ x0 ][ y0 ] is inferred to be equal to 0.

**pred\_mode\_flag** equal to 0 specifies that the current coding unit is coded in inter prediction mode. pred\_mode\_flag equal to 1 specifies that the current coding unit is coded in intra prediction mode. The variable CuPredMode[ x ][ y ] is derived as follows for x = x0..x0 + nCbS − 1 and y = y0..y0 + nCbS − 1:

* If pred\_mode\_flag is equal to 0, CuPredMode[ x ][ y ] is set equal to MODE\_INTER.
* Otherwise (pred\_mode\_flag is equal to 1), CuPredMode[ x ][ y ] is set equal to MODE\_INTRA.

When pred\_mode\_flag is not present, the variable CuPredMode[ x ][ y ] is derived as follows for x = x0..x0 + nCbS − 1 and y = y0..y0 + nCbS − 1:

* If slice\_type is equal to I or disc\_flag is equal to 1, CuPredMode[ x ][ y ] is inferred to be equal to MODE\_INTRA.
* Otherwise (slice\_type is equal to P or B and disc\_flag is equal to 0), when cu\_skip\_flag[ x0 ][ y0 ] is equal to 1, CuPredMode[ x ][ y ] is inferred to be equal to MODE\_SKIP.

I. 7.3.8.5.2 Coding unit extension syntax

|  |  |
| --- | --- |
| cu\_extension( x0 , y0 , log2CbSize ) { | **Descriptor** |
| if( disc\_flag[ x0 ][ y0 ] ) |  |
| **disc\_type\_flag**[ x0 ][ y0 ] | ae(v) |
| ... |  |

**disc\_type\_flag**[ x0 ][ y0 ] specifies the type of the depth intra skip coding mode. When not present, the value of disc\_type\_flag[ x0 ][ y0 ] is inferred to be equal to 0.

I.8.4.2 Derivation process for luma intra prediction mode

Input to this process is a luma location ( xPb, yPb ) specifying the top-left sample of the current luma prediction block relative to the top left luma sample of the current picture.

In this process, the luma intra prediction mode IntraPredModeY[ xPb ][ yPb ] is derived.

specifies the value for the intra prediction mode and the associated names.

Table I‑ – Specification of intra prediction mode and associated names

|  |  |
| --- | --- |
| **Intra prediction mode** | **Associated name** |
| 0 | INTRA\_PLANAR |
| 1 | INTRA\_DC |
| 2..34 | INTRA\_ANGULAR2..INTRA\_ANGULAR34 |
| 35 | INTRA\_DMM\_WFULL |
| 36 | INTRA\_DMM\_CPREDTEX |
| 37 | INTRA\_SINGLE\_SAMPLE |

IntraPredModeY[ xPb ][ yPb ] labelled 0..34 represents directions of predictions as illustrated in Figure 8 1.

* If disc\_flag[xPb][yPb] is equal to 1 and disc\_type\_flag[xPb][yPb] is equal to 1, IntraPredModeY[ xPb ][ yPb ] is set equal to INTRA\_ANGULAR10.
* Otherwise if disc\_flag[xPb][yPb] is equal to 1 and disc\_type\_flag[xPb][yPb] is equal to 0, IntraPredModeY[ xPb ][ yPb ] is set equal to INTRA\_ANGULAR26.
* Otherwise, if DepthIntraMode[ xPb ][ yPb ] is equal to INTRA\_DEP\_DMM\_WFULL, IntraPredModeY[ xPb ][ yPb ] is set equal to INTRA\_DMM\_WFULL.
* Otherwise, if DepthIntraMode[ xPb ][ yPb ] is equal to INTRA\_DEP\_DMM\_CPREDTEX, IntraPredModeY[ xPb ][ yPb ] is set equal to INTRA\_DMM\_CPREDTEX.

I.8.4.4.1 General decoding process for intra blocks

...

6. The variable residualFlag is set equal to !( disc\_flag[ xTb0 ][ xTb0 ]  | |  SdcFlag[ xTb0 ][ xTb0 ]) and depending on residualFlag, the following applies:

…

I. 8.4.4.2.1 General intra sample prediction

...

* Each sample p[ x ][ y ] is derived as follows:
  + If one or more of the following conditions are true, the sample p[ x ][ y ] is marked as "not available for intra prediction":
    - The variable availableN is equal to FALSE.
    - CuPredMode[ xNbY ][ yNbY ] is not equal to MODE\_INTRA and constrained\_intra\_pred\_flag is equal to 1 and single\_sample\_flag[ xTbCmp ][ yTbCmp ] is equal to 0.
  + Otherwise, the sample p[ x ][ y ] is marked as "available for intra prediction" and the sample at the location ( xNbCmp, yNbCmp ) is assigned to p[ x ][ y ].

When at least one sample p[ x ][ y ] with x = −1, y = −1..nTbS \* 2 − 1 and x = 0..nTbS \* 2 − 1, y = −1 is marked as "not available for intra prediction" and single\_sample\_flag[ xTbCmp ][ yTbCmp ] is equal to 0, the reference sample substitution process for intra sample prediction in subclause 8.4.4.2.2 is invoked with the samples p[ x ][ y ] with x = −1, y = −1..nTbS \* 2 − 1 and x = 0..nTbS \* 2 − 1, y = −1, nTbS, and cIdx as inputs, and the modified samples p[ x ][ y ] with x = −1, y = −1..nTbS \* 2 − 1 and x = 0..nTbS \* 2 − 1, y = −1 as output.

Depending on the value of predModeIntra, the following ordered steps apply:

* 1. When predModeIntra is in the range of 0 to 34, inclusive, and intra\_smoothing\_disabled\_flag is equal to 0 and either cIdx is equal to 0 or ChromaArrayType is equal to 3, the filtering process of neighbouring samples specified in subclause 8.4.4.2.3 is invoked with the sample array p, the transform block size nTbS and the colour component index cIdx as inputs, and the output is reassigned to the sample array p.
  2. The intra sample prediction process according to predModeIntra applies as follows:
     + If predModeIntra is equal to INTRA\_PLANAR, the corresponding intra prediction mode specified in subclause 8.4.4.2.4 is invoked with the sample array p and the transform block size nTbS as inputs, and the output is the predicted sample array predSamples.
     + Otherwise, if predModeIntra is equal to INTRA\_DC, the corresponding intra prediction mode specified in subclause 8.4.4.2.5 is invoked with the sample array p, the transform block size nTbS, and the colour component index cIdx as inputs, and the output is the predicted sample array predSamples.
     + Otherwise, if predModeIntra is in the range of INTRA\_ANGULAR2..INTRA\_ANGULAR34, the corresponding intra prediction mode specified in subclause 8.4.4.2.6 is invoked with the intra prediction mode predModeIntra, the sample array p, the transform block size nTbS, and the colour component index cIdx as inputs, and the output is the predicted sample array predSamples.
     + Otherwise, if predModeIntra is equal to INTRA\_DMM\_WFULL, the corresponding intra prediction mode specified in subclause I.8.4.4.2.7 is invoked with the location ( xTbY, yTbY ), the sample array p and the transform block size nTbS as inputs ,and the outputs are the predicted sample array predSamples.
     + Otherwise, if predModeIntra is equal to INTRA\_DMM\_CPREDTEX, the corresponding intra prediction mode specified in subclause I.8.4.4.2.8 is invoked with the location ( xTbY, yTbY ), with the sample array p and the transform block size nTbS as inputs, and the outputs are the predicted sample array predSamples.



Table I‑ – Association of ctxIdx and syntax elements for each initializationType in the initialization process

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Syntax structure** | **Syntax element** | **ctxTable** | **initType** | | |
| **0** | **1** | **2** |
| cu\_extension( ) intra\_mode\_ext( ) | depth\_intra\_mode\_flag |  | 0 | 1 | 2 |
| depth\_dc\_flag |  | 0 | 1 | 2 |
| depth\_dc\_abs |  | 0 | 1 | 2 |
| iv\_res\_pred\_weight\_idx |  |  | 0..2 | 3..5 |
| ic\_flag |  |  | 0 | 1 |
| dbbp\_flag |  | 0 | 1 | 2 |
| sdc\_flag |  | 0 | 1 | 2 |
| dim\_not\_present\_flag |  | 0 | 1 | 2 |
| disc\_flag | Table I‑20 | 0 | 1 | 2 |
| disc\_type\_flag | Table I‑21 | 0 | 1 | 2 |

Table I‑ – Syntax elements and associated binarizations

| **Syntax structure** | **Syntax element** | **Binarization** | |
| --- | --- | --- | --- |
| **Process** | **Input parameters** |
| cu\_extension( ) | iv\_res\_pred\_weight\_idx | TR | cMax = 2, cRiceParam = 0 |
| ic\_flag | FL | cMax = 1 |
| dbbp\_flag | FL | cMax = 1 |
| sdc\_flag | FL | cMax = 1 |
| disc\_flag | FL | cMax = 1 |
| intra\_mode\_ext( ) | dim\_not\_present\_flag | FL | cMax = 1 |
| depth\_intra\_mode\_flag | FL | cMax = 1 |
| wedge\_full\_tab\_idx | FL | cMax = wedgeFullTabIdxBits[ log2PbSize ] (defined in ) |
| depth\_dc\_flag | FL | cMax = 1 |
| depth\_dc\_abs | I.9.3.3.12 | - |
| depth\_dc\_sign\_flag | FL | cMax = 1 |
| disc\_type\_flag | FL | cMax = 1 |

Table I‑ –Assignment of ctxInc to syntax elements with context coded bins

| **Syntax element** | **binIdx** | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **2** | **3** | **4** | **>=5** |
| wedge\_full\_tab\_idx | bypass | bypass | bypass | bypass | bypass | bypass |
| depth\_dc\_flag | 0 | na | na | na | na | na |
| depth\_dc\_abs | 0 | 0 | 0 | bypass | bypass | bypass |
| depth\_dc\_sign\_flag | bypass | 0 | 0 | 0 | 0 | 0 |
| iv\_res\_pred\_weight\_idx | 0, 1 | 2 | na | na | na | na |
| ic\_flag | 0 | na | na | na | na | na |
| dbbp\_flag | 0 | na | na | na | na | na |
| depth\_intra\_mode\_flag | 0 | na | na | na | na | na |
| sdc\_flag | 0 | na | na | na | na | na |
| dim\_not\_present\_flag | 0 | na | na | na | na | na |
| disc\_flag | 0 | na | na | na | na | na |
| disc\_type\_flag | 0 | na | na | na | na | na |

Table I‑20 – Values of initValue for disc\_flag ctxIdx

|  |  |  |  |
| --- | --- | --- | --- |
| **Initialization variable** | **ctxIdx of sdc\_flag ctxIdx** | | |
| **0** | **1** | **2** |
| **initValue** | 154 | 154 | 154 |

Table I‑21 – Values of initValue for disc\_type\_flag ctxIdx

|  |  |  |  |
| --- | --- | --- | --- |
| **Initialization variable** | **ctxIdx of sdc\_flag ctxIdx** | | |
| **0** | **1** | **2** |
| **initValue** | 137 | 137 | 137 |

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