

CLAIMS

What is claimed is:

1. A method for a Hypothetical Reference Decoder, HRD, for a multi-layer video bitstream, the method comprising:

determining that an i-th layer_level_hrd parameters() syntax structure contains HRD parameters for sub-layer representations with TemporalId in the range of 0 to hrd_max_temporal_id[i], inclusive, when a sublayer coding picture buffer, CPB, parameters present flag, sublayer_cpb_params_present_flag, is equal to 1;

determining that the i-th layer level hrd parameters() syntax structure contains HRD parameters for the sub-layer representation with TemporalId equal to the hrd_max_temporal_id[i] only, when the sublayer_cpb_params_present_flag is equal to 0; wherein when vps_max_sub_layers_minus1 is equal to 0, the value of the sublayer_cpb_params_present_flag is inferred to be equal to 0; and

determining that HRD parameters for sub-layer representations with TemporalId in the range of 0 to hrd_max_temporal_id[i] - 1, inclusive, are inferred to be the same as that for a sub-layer representation with TemporalId equal to the hrd_max_temporal_id[i], when the sublayer_cpb_params_present_flag is equal to 0; wherein the HRD parameters includes the HRD parameters starting from a fixed_pic_rate_general_flag[i] syntax element till a sub_layer_hrd parameters(i) syntax structure immediately under the condition "if(general_vel_hrd_params_present_flag)" in the layer_level hrd parameters syntax structure.

2. The method of claim 1, wherein the hrd_max_temporal_id[i] specifies the TemporalId of the highest sublayer representation for which the HRD parameters are contained in the i-th layer_level_hrd_parameters() syntax structure; wherein a value of the hrd_max_temporal_id[i] shall be in the range of 0 to vps_max_sub_layers_minus1, inclusive.

3. An apparatus for a Hypothetical Reference Decoder, HRD, for a multi-layer video bitstream, the apparatus comprising:

a processor, a memory, a receiver and a transmitter; wherein the processor is configured to execute instructions stored in the memory to perform:

determining that an i-th layer_level_hrd_parameters() syntax structure contains HRD parameters for sublayer representations with TemporalId in the range of 0 to

hrd_max_temporal_id[i], inclusive, when a sublayer coding picture buffer, CPB, parameters present flag, sublayer_cpb_params_present_flag, is equal to 1;

determining that the i-th layer_level_hrd_parameters() syntax structure contains HRD parameters for the sub-layer representation with TemporalId equal to the hrd_max_temporal_id[i] only, when the sublayer_cpb_params_present_flag is equal to 0; wherein when vps_max_sub_layers_minus1 is equal to 0, the value of the sublayer_cpb_params_present_flag is inferred to be equal to 0; and

determining that HRD parameters for sub-layer representations with TemporalId in the range of 0 to hrd_max_temporal_id[i] - 1, inclusive, are inferred to be the same as that for a sub-layer representation with TemporalId equal to the hrd_max_temporal_id[i], when the sublayer_cpb_params_present_flag is equal to 0; wherein the HRD parameters includes the HRD parameters starting from a fixed_pic_rate_general_flag[i] syntax element till a sub_layer_hrd_parameters(i) syntax structure immediately under the condition "if(general_vcl_hrd_params_present_flag)" in the layer_level_hrd_parameters syntax structure.

4. The apparatus of claim 3, wherein the hrd_max_temporal_id[i] specifies the TemporalId of the highest sublayer representation for which the HRD parameters are contained in the i-th layer_level_hrd_parameters() syntax structure; wherein a value of the hrd_max_temporal_id[i] shall be in the range of 0 to vps_max_sub_layers_minus1, inclusive.

5. A system for a Hypothetical Reference Decoder, HRD, for a multi-layer video bitstream, the system comprising: an encoder and a decoder, wherein the encoder is configured to encode video signal to obtain a bitstream and send the bitstream to the decoder;

wherein the decoder is configured to decode the bitstream and reconstruct the video signal for display to an end user;

wherein the encoder or the decoder is further configured to:

determine that an i-th layer_level_hrd_parameters() syntax structure contains HRD parameters for sub-layer representations with TemporalId in the range of 0 to hrd_max_temporal_id[i], inclusive, when a sublayer coding picture buffer, CPB, parameters present flag, sublayer_cpb_params_present_flag, is equal to 1;

determine that the i-th layer_level_hrd_parameters() syntax structure contains HRD parameters for the sub layer representation with TemporalId equal to the hrd_max_temporal_id[i] only, when the sublayer_cpb_params_present_flag is equal to 0; wherein when vps_max_sub_layers_minus1 is equal to 0, the value of the sublayer_cpb_params_present_flag is inferred to be equal to 0; and

determine that HRD parameters for sub-layer representations with TemporalId in the range of 0 to hrd_max_temporal_id[i] - 1, inclusive, are inferred to be the same as that for a sub-layer representation with TemporalId equal to the hrd_max_temporal_id[i], when the sublayer_cpb_params_present_flag is equal to 0; wherein the HRD parameters includes the HRD parameters starting from a fixed_pic_rate_general_flag[i] syntax element till a sub_layer_hrd_parameters(i) syntax structure immediately under the condition "if(general_vcl_hrd_params_present_flag)" in the layer_level_hrd_parameters syntax structure.

6. The apparatus of claim 5, wherein the hrd_max_temporal_id[i] specifies the TemporalId of the highest sublayer representation for which the HRD parameters are contained in the i-th layer_level_hrd_parameters() syntax structure; wherein a value of the hrd_max_temporal_id[i] shall be in the range of 0 to vps_max_sub_layers_minus1, inclusive.