NUMBER RESTRICTION FOR SUBLAYERS

CROSS REFERENCE TO RELATED APPLICATIONS

[001] This application is based on International Patent Application No. PCT/CN2021/095124, filed on May 21, 2021, which claims~~[001] Under the applicable patent law and/or rules pursuant to the Paris Convention, this application is made to timely claim~~ the priority to and benefits of International Patent Application No. PCT/CN2020/091758, filed on May 22, 2020. All the aforementioned patent applications are hereby incorporated by reference in their entireties.~~For all purposes under the law, the entire disclosure of the aforementioned application is incorporated by reference as part of the disclosure of this application.~~

TECHNICAL FIELD

[002] This patent document relates to image and video coding and decoding.

BACKGROUND

[003] Digital video accounts for the largest bandwidth use on the internet and other digital communication networks. As the number of connected user devices capable of receiving and displaying video increases, it is expected that the bandwidth demand for digital video usage will continue to grow.

SUMMARY

[004] The present document discloses techniques that can be used by video encoders and decoders to video encoding or decoding.

[005] In one example aspect, a video processing method is disclosed. The method includes performing a conversion between a video comprising one or more video layers comprising one or more video pictures and a bitstream of the video, wherein the bitstream conforms to a format rule that specifies a relationship between a syntax element indicating an identifier of a video parameter set referenced by a video layer and a field of the bitstream.

[006] In another example aspect, another video processing method is disclosed. The method includes performing a conversion between a video comprising one or more video layers comprising one or more video pictures and a bitstream of the video according to a rule, wherein the rule specifies that pictures within a video layer are permitted to reference picture parameter sets that have different values of syntax elements indicative of whether picture partitioning is enabled for a corresponding picture.

CLAIMS

1. A method of video processing, comprising:

performing a conversion between a video comprising one or more video layers and a bitstream of the video according to a rule,

wherein the rule specifies that responsive to a value of a first field in a sequence parameter set (SPS) that is referred to by a video layer, a second field in a video parameter set referred to by the SPS that is indicative of a maximum number of sublayers allowed in the bitstream is construed to be equal to a third field in the SPS, wherein the third field is indicative of a maximum number of sublayers allowed in the video layer.

2. The method of claim 1, wherein the first field is an identifier of the video parameter set.

3. The method of claim 1 or 2, wherein the value of the first field equals to 0.

4. The method of claim 1 or 2, wherein the rule further specifies that responsive to the value of the first field, the value of the third field is in a range of 0 to 6, inclusive.

5. The method of claim 3 or 4, wherein the first field having the value indicates that the sequence parameter set does not refer to any video sequence parameter set.

6. The method of claim 1 or 2, wherein the rule further specifies that responsive to the first field greater than 0, the value of the third field is in a rage of 0 to a value of the second field.

7. The method of claim 1 or 2, wherein the rule specifies that responsive to the value of the first field, a value of the third field is in a range of 0 to 6 but not be greater than a value of the second field.

8. The method of any of claims 1 to 7, wherein the conversion includes encoding the video into the bitstream.

1. A method of video processing, comprising:

performing a conversion between a video and a bitstream of the video according to a first rule,

wherein the first rule specifies that responsive to a value of a first field of a sequence parameter set (SPS) that is indicative of an identifier of a video parameter set being equal to 0, a second field of the video parameter set that is indicative of a first maximum number of sublayers allowed in a layer specified by the video parameter set is construed to be equal to a third field in the SPS, wherein the third field is indicative of a second maximum number of sublayers allowed in each coded layer video sequence referring to the SPS.

2. The method of claim 1, wherein the first rule further specifies that responsive to the value of the first field being equal to 0, the value of the third field is in a range of 0 to 6, inclusive.

3. The method of claim 1 or 2, wherein if the value of the first field is greater than 0, the sequence parameter set refers to an identifier of the video parameter set in a video parameter set level.

4. The method of claim 1, wherein the first rule further specifies that responsive to the value of the first field greater than 0, the value of the third field is in a rage of 0 to a value of the second field, inclusive.

5. The method of any one of claims 1-4, wherein the value of the second field is equal to the first maximum number minus 1.

6. The method of any one of claims 1-5, wherein the value of the third field is equal to the second maximum number minus 1.

7. The method of any one of claims 1-6, wherein the conversion is performed according to a second rule,

9. The method of any of claims 1 to 7, wherein the conversion includes decoding the video from the bitstream.

10. The method of any of claims 1 to 7, wherein the conversion includes generating the bitstream from the video, and the method further comprises: storing the bitstream in a non-transitory computer-readable recording medium.

11. A video processing apparatus comprising a processor configured to implement a method recited in any one or more of claims 1 to 10.

12. A method of storing a bitstream of a video, comprising, a method recited in any one of claims 1 to 10, and further including storing the bitstream to a non-transitory computer-readable recording medium.

13. A computer readable medium storing program code that, when executed, causes a processor to implement a method recited in any one or more of claims 1 to 10.

14. A computer readable medium that stores a bitstream generated according to any of the above described methods.

15. A video processing apparatus for storing a bitstream representation, wherein the video processing apparatus is configured to implement a method recited in any one or more of claims 1 to 10.

wherein the second rule specifies that, responsive to the value of the first field being equal to 0, a total number of output layer sets specified by a video parameter set and the number of layers in a first output layer set is equal to 1.

8. The method of claim 7, wherein the second rule further specifies to set a layer identifier of the video parameter set to be equal to a NAL (network abstraction layer) unit header identifier (nuh_layer_id) of a layer in a coded video sequence.

9. The method of any one of claims 1-8, wherein the conversion is performed according to a third rule,

wherein the third rule specifies that pictures within a layer are permitted to reference picture parameter sets that have different values of syntax elements indicative of whether picture partitioning is enabled for a corresponding picture.

10. The method of claim 9, wherein the syntax elements equal to a first value specifies that no picture partitioning is applied to each picture referring to the picture parameter set; and the syntax elements equal to a second value specifies that each picture referring to a corresponding picture parameter set is allowed to be partitioned into more than one tile or slice.

11. The method of any one of claims 1-10, wherein the conversion is performed according to a fourth rule,

wherein the fourth rule specifies that a responsive to a syntax element indicative of whether loop filtering across tiles of a picture is enabled being absent from a picture parameter set referred to by the picture, the syntax element is inferred to have a particular value.

12. The method of claim 11, wherein the particular value is 0.

13. The method of claim 12, wherein the syntax element equal to 0 specifies that the in-loop filtering operations across the tiles of the picture are disabled for pictures referring to the picture parameter set.

14. The method of any one of claims 1-13, wherein the conversion includes encoding the video into the bitstream.

15. The method of any one of claims 1-13, wherein the conversion includes decoding the video from the bitstream.

16. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

perform a conversion between a video and a bitstream of the video according to a first rule,

wherein the first rule specifies that responsive to a value of a first field of a sequence parameter set (SPS) that is indicative of an identifier of a video parameter set being equal to 0, a second field of the video parameter set that is indicative of a first maximum number of sublayers allowed in a layer specified by the video parameter set is construed to be equal to a third field in the SPS, wherein the third field is indicative of a second maximum number of sublayers allowed in each coded layer video sequence referring to the SPS.

17. The apparatus of claim 16, wherein the conversion is performed according to a second rule, a third rule or a fourth rule; wherein

wherein the second rule specifies that, responsive to the value of the first field being equal to 0, a total number of output layer sets specified by a video parameter set and the number of layers in a first output layer set is equal to 1;

wherein the third rule specifies that pictures within a layer are permitted to reference picture parameter sets that have different values of syntax elements indicative of whether picture partitioning is enabled for a corresponding picture; or

wherein the fourth rule specifies that a responsive to a syntax element indicative of whether loop filtering across tiles of a picture is enabled being absent from a picture parameter set referred to by the picture, the syntax element is inferred to have a particular value.

18. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

perform a conversion between a video and a bitstream of the video according to a first rule,

wherein the first rule specifies that responsive to a value of a first field of a sequence parameter set (SPS) that is indicative of an identifier of a video parameter set being equal to 0, a second field of the video parameter set that is indicative of a first maximum number of sublayers allowed in a layer specified by the video parameter set is construed to be equal to a third field in the SPS, wherein the third field is indicative of a second maximum number of sublayers allowed in each coded layer video sequence referring to the SPS.

19. The non-transitory computer-readable storage medium of claim 18, wherein the conversion is performed according to a second rule, a third rule or a fourth rule; wherein

wherein the second rule specifies that, responsive to the value of the first field being equal to 0, a total number of output layer sets specified by a video parameter set and the number of layers in a first output layer set is equal to 1;

wherein the third rule specifies that pictures within a layer are permitted to reference picture parameter sets that have different values of syntax elements indicative of whether picture partitioning is enabled for a corresponding picture; or

wherein the fourth rule specifies that a responsive to a syntax element indicative of whether loop filtering across tiles of a picture is enabled being absent from a picture parameter set referred to by the picture, the syntax element is inferred to have a particular value.

20. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

generating a bitstream of a video according to a first rule,

wherein the first rule specifies that responsive to a value of a first field of a sequence parameter set (SPS) that is indicative of an identifier of a video parameter set being equal to 0, a second field of the video parameter set that is indicative of a first maximum number of sublayers allowed in a layer specified by the video parameter set is construed to be equal to a third field in the SPS, wherein the third field is indicative of a second maximum number of sublayers allowed in each coded layer video sequence referring to the SPS.