NVIDIA VIDEO CODEC SDK - ENCODER

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NVENC Preset Migration Guide

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Chapter 1. INTRODUCTION

This document provides table to map the NVENCODE API settings (specifically, preset and rate control mode) from Video Codec SDK 9.1 and earlier to the closest equivalent NVENCODE API settings in Video Codec SDK 10.0 and later. This table can be used as a migration guide to migrate to the new NVENCODE API preset architecture introduced in Video Codec SDK 10.0.

In general, it is strongly recommended to use the newer presets and NVENCODE API settings based on desired performance/quality trade-off. It is highly likely that your application may benefit from better quality encoding or higher performance by directly using the new NVENCODE presets, as the new APIs provide much more flexibility than earlier and are easy to understand.

Please use the mapping tables in this document only in situations where exactly same performance/quality is desired as was obtained in the older presets.

Table 1 and Table 2 show the mapping between older and newer presets exposed in the NVENCODE API for HEVC and H.264, respectively.

A combination of older preset (Column 1), rate control (RC) mode (Column 2) and resolution (Column 3) can be mapped to a new parameters of NVENCODE API: tuning info (Column 4), RC Mode (Column 5), preset (Column 7&9) and multipass (Column 6&8). The newer preset and multipass values will vary based on GPU Architecture and appropriate GPU architecture column must be selected.

In some cases, additional settings need to be included for exact mapping, and they are mentioned in columns Features 1 (Column 10 in Table 1 and Column 12 in Table 2) and Features 2 (Column 11 in Table 1 and Column 13 in Table 2).

As an example, if someone is using HEVC HQ Preset with VBR_HQ RC Mode for a 1080p encoding on Turing platform, this corresponds to Row 18 in Table 1. The closest settings as per the new NVENCODE API is P6 Preset, RC Mode VBR, Multipass set to 1, FrameIntervalP set to 1, IDR Period set to 60 and GOP Length set to 60.

It is important to note that Features 1 and Features 2 are just indicated to get an exact feature match on older presets and most applications would set these based on needs. For example, GOP length may be set to a larger value depending upon the application needs.

Chapter 2. HEVC PRESET MIGRATION TABLE

Table 1 HEVC Preset Migration Table

Settings in Video Codec SDK 9.1 and earlier			Equivalent settings in Video Codec SDK 10.0 and later							
Old Preset	Old RC Mode	Resolution	Tuning Info	RC Mode	Turing Multi Pass	Turing Preset	Pascal/ Maxwell MultiPass	Pascal/ Maxwell Preset	Features 1	Features 2
HP	VBR	720	High Quality	VBR	0	P1	0	P4	frameIntervalP 1	
HP	VBR	1080	High Quality	VBR	0	P1	0	P4	idr period 60	
HP	VBR	2160	High Quality	VBR	0	P1	0	P4	gop length 60	
HP	VBR_HQ	720	High Quality	VBR	1	P1	1	P4		
HP	VBR_HQ	1080	High Quality	VBR	1	P1	1	P4		
HP	VBR_HQ	2160	High Quality	VBR	1	P1	1	P4		
Default	VBR	720	High Quality	VBR	0	P5	0	P5		
Default	VBR	1080	High Quality	VBR	0	P5	0	P5		
Default	VBR	2160	High Quality	VBR	0	P5	0	P5		
Default	VBR_HQ	720	High Quality	VBR	1	P5	2	P5		
Default	VBR_HQ	1080	High Quality	VBR	1	P5	1	P5		
Default	VBR_HQ	2160	High Quality	VBR	1	P5	1	P5		
HQ	VBR	720	High Quality	VBR	0	P6	0	P6		
HQ	VBR	1080	High Quality	VBR	0	P6	0	P6		
HQ	VBR	2160	High Quality	VBR	0	P5	0	P6		
HQ	VBR_HQ	720	High Quality	VBR	1	P6	2	P6		
HQ	VBR_HQ	1080	High Quality	VBR	1	P6	1	P6		
HQ	VBR_HQ	2160	High Quality	VBR	1	P5	1	P6		
LowLatencyHP	CBR	720	Low Latency	CBR	0	P2	0	P4		

Settings in Video Codec SDK 9.1 and earlier			Equivalent settings in Video Codec SDK 10.0 and later							
Old Preset	Old RC Mode	Resolution	Tuning Info	RC Mode	Turing Multi Pass	Turing Preset	Pascal/ Maxwell MultiPass	Pascal/ Maxwell Preset	Features 1	Features 2
LowLatencyHP	CBR	1080	Low Latency	CBR	0	P2	0	P4		
LowLatencyHP	CBR	2160	Low Latency	CBR	0	P1	0	P4		
LowLatencyHP	CBR_HQ	720	Ultra Low Latency	CBR	1	P2	1	P4		
LowLatencyHP	CBR_HQ	1080	Ultra Low Latency	CBR	1	P2	1	P4		
LowLatencyHP	CBR_HQ	2160	Ultra Low Latency	CBR	1	P1	1	P4		
LowLatencyHP	CBR2LD	720	Low Latency	CBR	1	P2	1	P4		
LowLatencyHP	CBR2LD	1080	Low Latency	CBR	1	P2	1	P4		
LowLatencyHP	CBR2LD	2160	Low Latency	CBR	1	P1	1	P4		
LowLatencyDefault	CBR	720	Low Latency	CBR	0	P4	0	P4		
LowLatencyDefault	CBR	1080	Low Latency	CBR	0	P3	0	P4		
LowLatencyDefault	CBR	2160	Low Latency	CBR	0	P2	0	P4		
LowLatencyDefault	CBR_HQ	720	Ultra Low Latency	CBR	2	P4	2	P4		
LowLatencyDefault	CBR_HQ	1080	Ultra Low Latency	CBR	1	P3	1	P4		
LowLatencyDefault	CBR_HQ	2160	Ultra Low Latency	CBR	1	P2	1	P4		
LowLatencyDefault	CBR_LOWDELAY_HQ	720	Low Latency	CBR	2	P4	2	P4		
LowLatencyDefault	CBR_LOWDELAY_HQ	1080	Low Latency	CBR	1	P3	1	P4		
LowLatencyDefault	CBR_LOWDELAY_HQ	2160	Low Latency	CBR	1	P2	1	P4		
LowLatencyHQ	CBR	720	Low Latency	CBR	0	P5	0	P6		
LowLatencyHQ	CBR	1080	Low Latency	CBR	0	P4	0	P4		
LowLatencyHQ	CBR	2160	Low Latency	CBR	0	P4	0	P4		
LowLatencyHQ	CBR_HQ	720	Ultra Low Latency	CBR	2	P5	2	P6		
LowLatencyHQ	CBR_HQ	1080	Ultra Low Latency	CBR	2	P4	2	P4		
LowLatencyHQ	CBR_HQ	2160	Ultra Low Latency	CBR	1	P4	1	P4		
LowLatencyHQ	CBR_LOWDELAY_HQ	720	Low Latency	CBR	2	P5	2	P6		
LowLatencyHQ	CBR_LOWDELAY_HQ	1080	Low Latency	CBR	2	P4	2	P4		
LowLatencyHQ	CBR_LOWDELAY_HQ	2160	Low Latency	CBR	1	P4	1	P4		
BD	VBR	720	High Quality	VBR	0	P5	0	P5	frameIntervalP 1	outputseiBufferPeriod 1

Settings in Video Codec SDK 9.1 and earlier			Equivalent settings in Video Codec SDK 10.0 and later							
Old Preset	Old RC Mode	Resolution	Tuning Info	RC Mode	Turing Multi Pass	Turing Preset	Pascal/ Maxwell MultiPass	Pascal/ Maxwell Preset	Features 1	Features 2
BD	VBR	1080	High Quality	VBR	0	P5	0	P5	idr period 60	outputseiPictureTime 1
BD	VBR	2160	High Quality	VBR	0	P5	0	P6	gop length 60	outputAud 1
BD	VBR_HQ	720	High Quality	VBR	1	P5	2	P5		
BD	VBR_HQ	1080	High Quality	VBR	1	P5	1	P5		
BD	VBR_HQ	2160	High Quality	VBR	1	P5	1	P5		
LosslessHP	CQP	720	Lossless	CQP	X	P3	X	P3	frameIntervalP 1	
LosslessHP	CQP	1080	Lossless	CQP	X	P3	X	P3	idr period 30	
LosslessHP	CQP	2160	Lossless	CQP	X	P3	X	P3	gop length 30	
LosslessDefault	CQP	720	Lossless	CQP	X	P5	X	P5		
LosslessDefault	CQP	1080	Lossless	CQP	X	P5	X	P5		
LosslessDefault	CQP	2160	Lossless	CQP	X	P5	X	P5		

Chapter 3.
H264 PRESET MIGRATION TABLE

Table 2 H264 Preset Migration Table

Settings in Video Codec SDK 9.1 and earlier			Equivalent settings in Video Codec SDK 10.0 and later									
Old Preset	Old RC Mode	Resol-ution	Tuning Info	RC Mode	Turing Multi-Pass	Turing Preset	Pascal/ Maxwell Multi-Pass	Pascal/ Maxwell Preset	Kepler Multi-Pass	Kepler preset	Features 1	Features 2
HP	VBR	720	High Quality	VBR	0	P2	0	P1	0	P1	frameIntervalP 1	
HP	VBR	1080	High Quality	VBR	0	P2	0	P1	0	P1	idr period 30	
HP	VBR	2160	High Quality	VBR	0	P2	0	P1	0	P1	gop length 30	
HP	VBR_HQ	720	High Quality	VBR	1	P2	1	P1	2	P1		
HP	VBR_HQ	1080	High Quality	VBR	1	P2	1	P1	2	P1		
HP	VBR_HQ	2160	High Quality	VBR	1	P2	1	P1	2	P1		
Default	VBR	720	High Quality	VBR	0	P3	0	P3	0	P3		sliceMode 3
Default	VBR	1080	High Quality	VBR	0	P3	0	P3	0	P3		sliceModeData 4
Default	VBR	2160	High Quality	VBR	0	P3	0	P3	0	P3		
Default	VBR_HQ	720	High Quality	VBR	2	P3	2	P3	2	P3		
Default	VBR_HQ	1080	High Quality	VBR	2	P3	2	P3	2	P3		
Default	VBR_HQ	2160	High Quality	VBR	1	P4	1	P3	2	P3		
HQ	VBR	720	High Quality	VBR	0	P4	0	P4	0	P4		
HQ	VBR	1080	High Quality	VBR	0	P4	0	P4	0	P4		
HQ	VBR	2160	High Quality	VBR	0	P4	0	P4	0	P4		
HQ	VBR_HQ	720	High Quality	VBR	2	P4	2	P4	2	P4		
HQ	VBR_HQ	1080	High Quality	VBR	1	P5	1	P5	2	P4		
HQ	VBR_HQ	2160	High Quality	VBR	1	P5	1	P5	2	P4		

Settings in Video Codec SDK 9.1 and earlier			Equivalent settings in Video Codec SDK 10.0 and later									
Old Preset	Old RC Mode	Resol-ution	Tuning Info	RC Mode	Turing Multi-Pass	Turing Preset	Pascal/ Maxwell Multi-Pass	Pascal/ Maxwell Preset	Kepler Multi-Pass	Kepler preset	Features 1	Features 2
LowLatencyHP	CBR	720	Low Latency	CBR	0	P2	0	P4	0	P3		sliceMode 3
LowLatencyHP	CBR	1080	Low Latency	CBR	0	P2	0	P3	0	P3		sliceModeData 4
LowLatencyHP	CBR	2160	Low Latency	CBR	0	P2	0	P2	0	P2		
LowLatencyHP	CBR_HQ	720	Ultra Low Latency	CBR	1	P2	1	P4	2	P3		
LowLatencyHP	CBR_HQ	1080	Ultra Low Latency	CBR	1	P2	1	P3	2	P3		
LowLatencyHP	CBR_HQ	2160	Ultra Low Latency	CBR	1	P2	1	P2	2	P2		
LowLatencyHP	CBR_LOWDELAY_HQ	720	Low Latency	CBR	1	P2	1	P4	2	P3		
LowLatencyHP	CBR_LOWDELAY_HQ	1080	Low Latency	CBR	1	P2	1	P3	2	P3		
LowLatencyHP	CBR_LOWDELAY_HQ	2160	Low Latency	CBR	1	P2	1	P2	2	P2		
LowLatencyDefault	CBR	720	Low Latency	CBR	0	P4	0	P4	0	P4		
LowLatencyDefault	CBR	1080	Low Latency	CBR	0	P3	0	P4	0	P3		
LowLatencyDefault	CBR	2160	Low Latency	CBR	0	P2	0	P2	0	P2		
LowLatencyDefault	CBR_HQ	720	Ultra Low Latency	CBR	2	P4	2	P4	2	P4		
LowLatencyDefault	CBR_HQ	1080	Ultra Low Latency	CBR	2	P3	2	P4	2	P3		
LowLatencyDefault	CBR_HQ	2160	Ultra Low Latency	CBR	1	P2	1	P2	2	P2		
LowLatencyDefault	CBR_LOWDELAY_HQ	720	Low Latency	CBR	2	P4	2	P4	2	P4		
LowLatencyDefault	CBR_LOWDELAY_HQ	1080	Low Latency	CBR	2	P3	2	P4	2	P3		
LowLatencyDefault	CBR_LOWDELAY_HQ	2160	Low Latency	CBR	1	P2	1	P2	2	P2		
LowLatencyHQ	CBR	720	Low Latency	CBR	0	P4	0	P4	0	P4		
LowLatencyHQ	CBR	1080	Low Latency	CBR	0	P4	0	P4	0	P4		
LowLatencyHQ	CBR	2160	Low Latency	CBR	0	P4	0	P4	0	P4		
LowLatencyHQ	CBR_HQ	720	Ultra Low Latency	CBR	2	P4	2	P5	2	P4		
LowLatencyHQ	CBR_HQ	1080	Ultra Low Latency	CBR	2	P4	2	P4	2	P4		
LowLatencyHQ	CBR_HQ	2160	Ultra Low Latency	CBR	1	P4	1	P4	2	P4		
LowLatencyHQ	CBR_LOWDELAY_HQ	720	Low Latency	CBR	2	P4	2	P5	2	P4		
LowLatencyHQ	CBR_LOWDELAY_HQ	1080	Low Latency	CBR	2	P4	2	P4	2	P4		
LowLatencyHQ	CBR_LOWDELAY_HQ	2160	Low Latency	CBR	1	P4	1	P4	2	P4		
BD	VBR	720	High Quality	VBR	0	P4	0	P4	0	P4	frameIntervalP 3	outputseiBufferPeriod 1
BD	VBR	1080	High Quality	VBR	0	P4	0	P4	0	P4	idr period 30	outputseiPictureTime 1

Settings in Video Codec SDK 9.1 and earlier			Equivalent settings in Video Codec SDK 10.0 and later									
Old Preset	Old RC Mode	Resol-ution	Tuning Info	RC Mode	Turing Multi-Pass	Turing Preset	Pascal/ Maxwell Multi-Pass	Pascal/ Maxwell Preset	Kepler Multi-Pass	Kepler preset	Features 1	Features 2
BD	VBR	2160	High Quality	VBR	0	P4	0	P4	0	P4	gop length 30	outputAud 1
BD	VBR_HQ	720	High Quality	VBR	1	P5	1	P5	2	P5		basref 0
BD	VBR_HQ	1080	High Quality	VBR	1	P5	1	P5	2	P5		sliceMode 3
BD	VBR_HQ	2160	High Quality	VBR	1	P5	1	P5	2	P5		sliceModeData 4
LosslessHP	CQP	720	lossless	CQP	X	P2	X	P2	X	X	frameIntervalP 1	sliceMode 3
LosslessHP	CQP	1080	lossless	CQP	X	P2	X	P2	X	X	idr period 30	sliceModeData 1
LosslessHP	CQP	2160	lossless	CQP	X	P2	X	P2	X	X	gop length 30	
LosslessDefault	CQP	720	lossless	CQP	X	P3	X	P3	X	X		
LosslessDefault	CQP	1080	lossless	CQP	X	P3	X	P3	X	X		
LosslessDefault	CQP	2160	lossless	CQP	X	P3	X	P3	X	X