A study on High Quality Video Traffic

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***Abstract*—A brief study summarizing various High Quality Video Traffic.**

Keywords— 4K, High Efficiency Video Coding, Blu-Ray, .m2ts.

I. Introduction

The demand for better picture quality has always seen a spur. This is possible because of advent in the compression technologies that are used as codecs in these resolutions.

II. OVERVIEW OF TYPES.

In this study we are looking at two different types of High Quality Video Traffics.

A. 4K

4K describes the 4,096 x 2160 resolution first introduced in digital cinemas. That's four times the 1,920 x 1,080 pixels found in your full HD TV. The extra resolution of 4K images adds better definition and clarity to the picture. The result is images that look incredibly life-like, more like looking through a window than watching TV.

It has high dynamic range (HDR), high frame rate (HFR) and wide color gamut (WCG). It has up to 60 frames, 8-bit or 10-bit sampling to the home. Screen size, viewing distance, viewing angle, frame rate and sample bit depth are all important factors for the delivery and consumption of 4K TV.

The compression technique behind 4K is called the High Efficiency Video Coding (HEVC), also known as H.265 halve the file size of 720p and 1080p content making it far easier to download or stream HD video over slow connections. While 4K video increases picture quality by making individual pixels smaller, effectively what H.265 does is make them bigger to reduce the bitrate (and therefore file size). It then performs a vast array of processing tricks on the video as it is played to get the detail back.

For context H.264 could grab a 16x16 ‘macroblock’ of pixels and perform nine ‘intra-prediction directions’ – aka educated guesses – that allowed the pixels to be rebuilt within each block. H.265 can grab 64x64 ‘superblocks’ and perform 35 infra-prediction directions to rebuild them. Like H.264, H.265 varies the size of blocks it takes. For example, it would take much smaller blocks (down to 4x4 pixels) around detailed areas like facial features and much bigger blocks of the sky or a relatively plain background. HEVC replaces 16×16 pixel macroblocks, which were used with previous standards, with coding tree units (CTUs) which can use larger block structures of up to 64x64 samples and can better sub-partition the picture into variable sized structures. HEVC initially divides the picture into CTUs which can be 64×64, 32×32, or 16×16 with a larger pixel block size usually increasing the coding efficiency.Parallel Processing Tools like Tiles, Wavefront Parallel Processing are used.

B. *Blu-Ray*

Blu-ray or Blu-ray Disc (BD) is a digital optical disc data storage format. it is capable of storing high-definition (720p and 1080p) and ultra high-definition video resolution (2160p). Blu-ray Disc discs contain 25 GB per layer, with dual layer discs (50 GB) being the industry standard for feature-length video discs. Triple-layer discs (100 GB) and quadruple layers (128 GB) are available for *BD-XL* re-writer drives. High-definition video may be stored on Blu-ray discs with up to 2160p resolution (3840×2160 pixels), at up to 60 frames per second.

Audio, video, and other streams are multiplexed and stored on Blu-ray Discs in a container format based on the MPEG transport stream. It is also known as BDAV MPEG-2 transport stream and can use filename extension .m2ts. Blu-ray Disc titles authored with menus are in the BDMV (Blu-ray Disc Movie) format and contain audio, video, and other streams in BDAV container.For video, all players are required to process H.262/MPEG-2 Part 2, H.264/MPEG-4 Part 10: AVC, and SMPTE VC-1. For audio, BD-ROM players are required to implement Dolby Digital (AC-3), DTS, and linear PCM. Players may optionally implement Dolby Digital Plus and DTS-HD High Resolution Audio as well as lossless formats Dolby TrueHD and DTS-HD Master Audio.

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