Streaming Media

Overview

Streaming media is a rage nowadays. TV channels, social media sites, online radio stations, and OTT apps are a few common examples of media that stream content. If you're curious about the recent increase in streaming media and how it differs from traditional media files, this blog will clarify things for you.

What is streaming media

Streaming media is an audio or video file played directly from the Internet. One of the most significant benefits of streaming media is that you can skip to a later moment in the file and instantly start listening to or watching from that moment onward without waiting for the earlier part to complete downloading.

In streaming media, a body of content, such as a movie or song, is sliced up into short, logical segments. Each of these segments functions as a separate file. Due to the slicing up of content, streaming media is often referred to as segmented content. MPD and M3U8 are the two leading file formats for live streaming. All streaming media have an index file. The index file contains the locations and durations of every segment, serving as a central reference point for playing the streaming media. Media players can read index files and run them in a way that allows you to experience watching a motion picture.

Advantages of streaming media

In streaming media, if you choose to watch a movie or a TV program from a specific moment forward, only the segment you selected for viewing - downloads. Downloading solely the segment from your chosen point means that you can start watching outright without needing to download any of the sections you skipped. Such an outright download of a segment is possible because each segment is treated as a discrete file. In the case of earlier media files, if you chose to watch a movie or a program from a

moment in the middle, you had to bear with content buffering while the preceding section was downloading. The breaking up of content into short segments also allows live streaming. When watching a livestreaming event, content is constantly sent and received over the Internet. An Index file updates each new feed as and when it arrives. Streaming media requires very little storage space; thus, you seldom run out of storage in your device. Also, you do not need to install any additional software or codecs on your device to access live streaming. In streaming media, live-streaming content is briefly stored (cached). So, even if you join a livestreaming event a few minutes after it has begun or pause it for some time in the middle, you can still watch the content streamed before you joined or during the time you paused. Alternatively, you can catch up live to watch the event in real-time.

Disadvantages of streaming media

While streaming content offers numerous advantages, it also comes with some disadvantages. You always need an Internet connection to watch streaming media—even if you have watched the same content previously on the same device. Having a fast enough Internet connection is imperative for seamless streaming without noticeable buffering. Accessing certain streaming content may require a subscription fee.

Quality of streaming content

Frame rate, encoding, bit rate, and resolution are the four factors that collectively determine the quality of segmented content. Frame rate is the number of frames a camera captures in a second; ten frames per second (fps) is regarded as a minimum to produce the illusion of continuous motion. The illusion is the result of the nature of the human eye and brain. The human eye and brain can only process 10 to 12 separate images per second, retaining an image for up to a fifteenth of a second. If a subsequent image replaces it within this period, it creates an illusion of continuity; we perceive the images not as static but as ones in motion.

A bit (short for binary digit) is a computer's smallest data unit. Bit rate is the number of bits transmitted over the Internet per second. Resolution is the number of pixels present

in every square inch of an image. A pixel (or picture element) is an image's smallest unit of information. The higher the number of pixels per square inch, the higher the image's clarity.

What is adaptive streaming

Adaptive streaming delivers content to users based on their internet speed and device capabilities. If a user has a slow Internet connection or a device that does not support high-quality displays, they may miss out on streaming content that is available only in high-quality formats. In adaptive streaming, a file is reproduced in multiple formats of varying quality. Maintaining the same fps, bits per second, and encoding, changing the resolution of the content renders files of varying quality. Adaptive streaming, therefore, makes streaming media accessible to all users, from those with low internet speeds and limited device capabilities to those with high internet speeds and advanced devices.

The user's media player assesses the available Internet speed and the device’s capability. In adaptive streaming, the initial segments play in the lowest quality version. However, once the media player determines that the user's Internet speed and device capabilities are sufficient, it begins streaming the subsequent segments in a higher quality version that is compatible.