Basic video streaming problems

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Video Streaming and problems associated with it Introduction Video streaming has become very common on the World Wide Web. It has become a popularsource for viewing sports, entertainment and news. It has proved to be an alternate to downloading of files. The main concept behind video streaming is to split the clip into smaller parts. These parts are then sent to the receiver in succession, where they are decoded and played back as a video (Delete-Computer-History. com n. d.). The advantage with video streaming is that it does not wait for the video to be received; the parts of the clip are played in succession as they are received at the other end. However, there are several drawbacks related to the concept of video streaming.

2. Issues with Video Streaming

Video streaming has its limitations on the internet because internet does not give any surety of any fixed bandwidth, delay or packet loss. It works on a " best effort service" (Apostolopoulos et al. 2002). These are considered to be variable factors that change with respect to the quality of internet connection. There have been many researches carried out over the years to induce more reliability and consistency in video streaming. These three issues are discussed in detail:

2. 1Bandwidth

As stated earlier, the bandwidth between two nodes is variable and might not be known. This variability causes problems in the traffic flow from one point to the other (Wu et al. 2001). If the sender sends data at a rate which is faster than the available bandwidth then congestion and low quality streaming is resulted. On the contrary, if the sender sends data at a rate which is slower than the available bandwidth then the receiver decodes a

sub-optimal video quality (Apostolopoulos et al. 2002). A strategy to overcome this problem is to ensure a bandwidth that is acceptable to both the nodes; this can be done by estimating the available bandwidth and striking a balance between the estimated bandwidth and video bit rate transferred over the link.

2. 2End-to-End Delay

The degree of this issue varies from packet to packet. The variation in the delay of every packet depends on its respective queues on different routers. If there exist some variations in the end-to-end delays then it is known as delay jitter (Apostolopoulos et al. 2002). The main reason behind this problem lies in the fact that the receiver is designed to decode and thus display frames at a certain rate. Some frames may arrive at the receiver late due to this delay jitter; this can create a problem at the receiver because he is programmed to decode the frames at a certain rate. These late frames will cause jerks in the display of the video (Nguyen n. d.). This problem is rectified by introducing a playout buffer, however this might put another delay (Oram 2002).

2. 3Packet Loss

There are different types of packet losses that may be experienced by different networks for e. g.; a packet loss is experiences in the environment of Internet when a packet is lost and wireless networks suffer losses due to bit errors or burst errors. There might be a loss of packets due to buffer overloading or some noise on the communication channel. This problem creates a severe constraint in producing good quality videos. Some mechanisms have been introduced in the networks to mitigate this issue: forward error correction, retransmissions, error concealment and error-

resilient video coding (Apostolopoulos et al. 2002).

Conclusion

Video streaming is an efficient means of watching clips and videos on the internet but it requires a good and stable internet connection to experience good quality videos.

References

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