Literature Review on Video Streaming in Social Networks

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Abstract— Video Streaming is transferring video from one location into another. Video streaming has become more and more popular business video streaming applications such as YouTube accounting for a large quantity of Internet traffic. Using the cloud, user can stream any video from any video provider service to social network services. User, whereas streaming some kind of video in wireless network over the web, traffic can occur in this streaming. Because of this traffic, we tend to get a poor service quality of video streaming like long buffering time and intermittent disruptions. In this paper, I surveyed some completely different video streaming concept and technique to enhance the quality of videos.

Key words: Scalable Video Coding, Adaptive Video Streaming, Mobile Networks, Social Video Sharing, Cloud Computing

I. Introduction

Internet technology is changing at a rapid pace and also the quicker the technology changes, the more people expect from the Internet. Users were once satisfied with text and still images on their web pages. Now they want to see video and want it fast. Users want the quality to be as good as what they see on their television. Video streaming is a method to deliver video over the Internet. Though far from a perfect solution, streaming video technology is changing into a lot of powerful all the time. With video streaming, designers will broadcast lectures, make announcements, deliver seminars, or show exactly how something is supposed to work. Users can see it anytime, quenching some of their thirst for fast, high-quality video. Video streaming provides flexibility as well. Users can view what they need and once they need.

A. Video Streaming:

The increasing demand for video streaming has meant video constitutes a large portion of the total data traffic on the Internet. Video streaming means that divide the entire videos into number of segment and then transmitted the segment into client. While transmitting the videos in server, client side can automatically create the buffer for storing the divide segment. If one buffer is full, video can start to play and automatically create another buffer for storing remaining segment.

Video data are usually encoded as frames to be displayed at fixed frequencies, for example, 1 Mbps displayed at 30 frames per second. As video data arrives at the client, data is placed into a buffer to be decoded and displayed on the screen at the right time. A client buffer can be used to alleviate degradations caused by unwanted changes in data rate. Packets are temporarily stored at the client buffer in order to smooth out bandwidth variation. The role of the client buffer in video streaming. The fill rate is that the rate data enters the client buffer and the drain rate is the rate the playout drains from the client buffer.

As video data arrives at client side from the server, data put into the client buffer at the fill rate then pulled out at the drain rate and is decoded and displayed. With buffered data, the receiver is able to smooth over temporary drops in the received rate. Choosing an appropriate size of buffer is important. If the buffer is simply too tiny, when TCP congestion control reduces the fill rate below the drain rate, it causes the buffer to empty and results in unwanted pauses in the video playout. On the other hand, if the buffer is too large then users have to wait extra time when filling the buffer before watching the video.

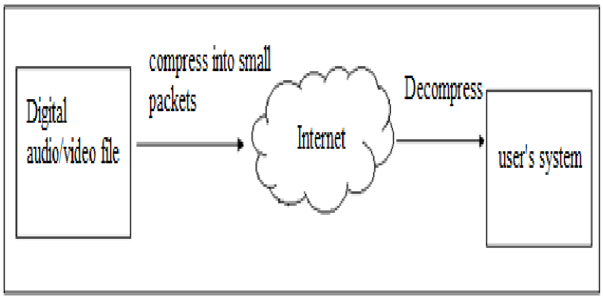

Fig. 1: Video Streaming Works

Fig.1 show how video streaming works. The digital audio/video file can compress and breaking it into small packets, which are sent, one after another, over the network. When the packets reach their destination, they are decompressed and reassembled into a form that can be played by the user's system. To maintain the illusion of seamless play, the packets are "buffered" so a number of them are downloaded to the user's machine before playback. In a perfect world, streaming video works by downloading the initial portion of the file, which is named the buffer, into the user's player.

II. Related Work

A. Adaptive Video Streaming Techniques:

In the adaptive streaming, the video traffic rate is adjusted on the fly in order that a user can experience the maximum possible video quality supported his or her link’s time-varying bandwidth capacity. There are mainly two types of adaptive streaming techniques, depending on whether the adaptivity is controlled by the client or the server. The Microsoft’s Smooth Streaming may be a live adaptive streaming service which may switch among different bit rate segments encoded with configurable bit rates and video resolutions at servers, while clients dynamically request videos based on local monitoring of link quality.

Adobe and Apple also developed client-side HTTP adaptive live streaming solutions operating in the similar manner. There also are some similar adaptive streaming services wherever servers controls the adaptive transmission of video segments, for example, the Quality Adaptive Streaming. However, most of those solutions maintain multiple copies of the video content with completely different bit rates that brings huge burden of storage on the server. Regarding rate adaptation controlling techniques, TCP-friendly rate control methods for streaming services over mobile networks are proposed, wherever TCP turnout of a flow is predicted as a function of packet loss rate, round trip time, and packet size.

Considering the estimated throughput, the bit rate of the streaming traffic is adjusted. A rate adaptation algorithm for conversational 3G video streaming is introduced by. Then, a few cross-layer adaptation techniques are discussed, which might acquire additional correct info of link quality in order that the speed adaptation is additional accurately made. However, the servers have to always control and so suffer from large workload. Recently the H.264 Scalable Video Coding (SVC) technique has gained a momentum.

An adaptive video streaming system based on SVC is deployed in, which studies the real-time SVC decoding and encoding at PC servers. The work in proposes a quality-oriented scalable video delivery using SVC, but it is only tested in a simulated LTE Network. Regarding the encoding performance of SVC, CloudStream mainly proposes to deliver high-quality streaming videos through a cloud-based SVC proxy, which discovered that the cloud computing can significantly improve the performance of SVC coding. The above studies motivate us to use SVC for video streaming on top of cloud computing.

Rate Variability-Distortion (VD) Curve of Encoded Video and its Impact on Statistical Multiplexing [3] - The quantity of video streams that may be supported depends each on the mean bit rate still as bit rate variability of the video streams. Here, introduce the speed variability-distortion (VD) curve that relates the bit rate variability to the standard level of an encoded video.

Region of Interest-Based Adaptive Multimedia Streaming Scheme [4] - Aims at adjusting the transmitted content supported the obtainable information measure area unit decreased and consequently the transmission quality will increases. This paper presents a Novel Region Of Interest-based Adaptive Scheme (ROIAS) for transmission streaming that when performing transmission-related quality adjustment.

Adaptive Video Streaming over a Mobile Network with Tcp-Friendly Rate Control [5] - This paper investigates the performance of TFRC to regular the transmission rate of scalable video streams once employed in a network. The bit rate of the stream will be dynamically tailored to the ever-changing channel that greatly improves all performance like as interruption time, loss rate, delay and buffer requirements.

Efficient P2P Video Sharing Scheme in Online Social Network [6] - Peer-to-Peer video streaming may be decentralized approach that supports for distributed applications like as social networking. It streams video content among the massive variety of clients who are self-organized into a virtual overlay network over the internet. It will considerably cut back the server workload and also achieves high scalability by effectively utilizing the inherent network resources.

B. Mobile Cloud Computing Techniques:

The cloud computing has been well positioned to supply video streaming services, particularly within the wired Internet thanks to its scalability and capability. For example, the quality-assured information measure auto-scaling for VoD streaming supported on the cloud computing is projected , and also the CALMS framework may be a cloud assisted live media streaming service for globally distributed users. However, extending the cloud computing-based services to mobile environments needs a lot of factors to consider: wireless link dynamics, user quality, the restricted capability of mobile devices. More recently, new designs for users on high of mobile cloud computing environments are proposed, that virtualize private agents that are in charge of satisfying the requirements (e.g. QoS) of individual users like as Cloudlets and cloud. Thus, we tend to area unit actuated to style the AMES-Cloud framework by using virtual gents within the cloud to supply adaptational video streaming services.

III. AMES-CLOUD FRAMEWORK

In this section we tend to justify the AMES-Cloud framework includes the Adaptive Mobile Video streaming (AMoV) and therefore the Efficient Social Video sharing (ESoV). The entire video storing and streaming system within the cloud is named the Video Cloud (VC). In the VC, there is a large-scale video base (VB) that stores the foremost of the popular video clips for the video service providers (VSPs). A temporal video base (tempVB) is employed to cache new candidates for the popular videos, whereas tempVB counts the access frequency of every video. The VC keeps running a collector to seek videos which are already popular in VSPs, and can re-encode the collected videos into SVC format and store into tempVB first.

By this 2-tier storage, the AMES-Cloud will keep serving most of widespread videos forever. Note that management work will be handled by the controller in the VC. Specialized for each mobile user, a sub-video cloud (subVC) is created dynamically if there is any video streaming demand from the user. The sub-VC has a sub video base (subVB), which stores the recently fetched video segments. Note that the video deliveries among the subVCs and the VC in most cases are actually not “copy”, but just “link” operations on the same file eternally within the cloud data center. There is also encoding function in subVC, and if the mobile user demands a new video, which is not in the subVB or the VB in VC, the subVC will fetch, encode and transfer the video.

During video streaming, mobile users will always report link conditions to their corresponding subVCs, and then the subVCs offer adaptive video streams. Each mobile device also has a temporary caching storage, which is called local video base (localVB), and is used for buffering and prefetching. Note that as the cloud service may across different places, or even continents, so in the case of a video delivery and prefetching between different data centers, an transmission will be carried out, which can be then called “copy”. And because of the optimal deployment of data centers, as well as the capable links among the data centers, the “copy” of a large video file takes tiny delay.

IV. EXPERIMENTAL SETUP

The prediction based adaptive video streaming framework , e.g., Apple's HTTP adaptive be alive streaming resolution, Microsoft's Smooth Streaming system , and cover up to remain many copies of the video recorder content with a range of bit rates, and thus bring massive load of storage to the server. Therefore the fresh H.264 Scalable Video Coding (SVC) has to expand lots of special treatment. SVC defines wide – ranging profiles of mobile video streams with some base layer (BL) and numerous enhancement layers (ELs). The simultaneous SVC encoding and decoding on PC servers is measured. As well the work has organized sin the cloud - based SVC replacement has viewing that the mobile cloud computing can extensively get better the performance of SVC coding. Other power of mobile cloud based SVC encoding is that, one time user has have need of to programme a video cartridge by a sub VC, the prearranged segments of layers will be intellectual to re- used amongst sub VCs, and as a result user don't want to request to re-encode the video streams. While the mobile ser dynamically initializes to stream a video cartridge, cloud mediator will be agent be rapid widespread for that mobile user. The mobile clients continue tracks on metrics, together with signal control, and bandwidth and packet loss, under assured duty cycle.

V. CONCLUSION

In this paper, I surveyed totally different video streaming conception and analyse the video bit rate. The main focus of this paper is to enhance the standard of video and transmission ability and refetching for mobile users. We have a future work of shared videos in social network are securely open to particular friends of users. So, we tend to produce a personal key for video, to avoid unwanted activities publically networks i.e., social activities.

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