An Approach To Efficient Handling The Video Streaming On Mobile Platform And Video Sharing In Social Network

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***Abstract*-Nowadays there is an explosive growth of smart phones providing more real-time applications. In the mean while there is a need of increasing the power of mobile networks for the demands of video traffic. These wireless networks cannot be able to handle video traffic in efficient manner. There is a gap between the traffic demand and link capacity along with time varying bandwidth conditions, results in poor quality of video streaming over mobile network. This causes the user feels long buffering time, inefficient use of bandwidth, delay. Hence there is a need to efficient handling of video streaming in mobile networks. Our project proposes a new approach ABSS Cloud – it has two concepts AMOV and ESOV. AMoV efficiently handles the video by HLS streaming makes the bit streams adaptively adjust in the mobile network and efficiently adapts the resolution by using H.264.ESoV makes the mobile user efficient sharing of the video in their social network.**

***Keywords*: H.264, HLS, Cloud computing, Adaptive video streaming, Social video sharing, Mobile networks.**

I. INTRODUCTION

Together with a rapid growth of the mobile applications in a last few years, mobile has becoming an essential part of human life. Mobile applications provides various types of services which runs on the remote servers via wireless networks provides much richer contents and social interactions to users on the move. Vastly growing progress of the mobile computing becomes a powerful trend in developing technology. Video streaming is more challenging in the wireless networks because it has been suffering from video traffic transmissions over a insufficient bandwidth of wireless links and along with time varying link conditions results in a long buffering time and poor service quality of videos. This shows there is a need of improvement of service qualities.

Cloud computing have been recognized as the recent generation computing infrastructure. Cloud computing allows the user to use infrastructure of cloud like servers, network and storage, and software's (Application Programs) provided by cloud providers (Ex: Amazon, Google) at low cost. Cloud allows the user to utilize the resources in an on-demand fashion based on their needs to provide the services.

There are two concepts that are used to improve the service quality of mobile video streaming.

Scalability: Mobile video streaming services should provide different video resolutions, different computing power and different connectionless links. Available link capacity varies over time and space depending on its signal strength. To address this issue scalable video coding (SVC) technique of the H.264 AVC video compression standard is used.

Adaptability: Existing streaming techniques are designed by considering stable traffic links between servers and users is less efficient because of fluctuating wireless link status. To address this issue, we need to adjust the video bit rate to the time varying available bandwidth of each mobile user. These techniques efficiently reduce packet losses and bandwidth waste. Scalability and adaptability features can be combined to accomplish the best possible quality of video streaming services.

Nowadays social network services [SNSs] becoming popular. There have been proposals to improve the Quality of content delivery using social network services.

In this paper, here is an architecture named ABSS(Adaptive Bit Stream Service) cloud consists of two main parts AMOV (Adaptive Mobile Video Streaming) and ESOV(Efficient Social Video Sharing) provides video streaming and social content sharing respectively.

II. RELATED WORK

A. Adaptive Streaming

In the past few decades RTSP is been used in streaming video. RTSP is a good example of a traditional streaming protocol. It is a statefull protocol, means that when the client connects the streaming server, server keeps track on the clients state. In the other hand HTTP is a stateless protocol. Once HTTP client request data, server responds it by sending data, it's a onetime session it won't remember the clients or its state.

In these emerging technology service provider should have the ability to provide new added value multi-media services. Adaptive streaming is an efficient delivery method that acts like streaming but it is based on HTTP progressive downloading. In this implementation the audio/video is divided into many chunks and encoded based on the desired delivery format. It provides significant advantage in terms of both user's perceived quality and resource utilization for content and network service providers.

B. Mobile Cloud Computing Techniques

Mobile Cloud computing is an infrastructure where both data storage and processing happen outside of mobile device. Applications move the computing power and data storage away from mobile phones and into the cloud. By using technology needs to keep track of the bandwidth of each mobile user.

There has been a recent trend that video-on-demand (VoD) providers such as Netflix are leveraging resources from cloud services for multimedia streaming [5]. In this, it considers the scenario that a VoD provider can make reservations for bandwidth guarantees from cloud service providers to guarantee the streaming performance in each video channel. It proposes a predictive resource auto-scaling system that dynamically books the minimum bandwidth resources from multiple data centers for the VoD provider to match its short-term demand projections.

III. EXISTING SYSTEM

In the existing system when user type a URL in mobile browsers, it lets user to navigate to the respective page and if that page has an embedded video in the URL it starts streaming using the mobile network whether (WI-FI, GPRS) and based on the strength of the signal it keep on streaming as well as playing. If the resolution is HD or high it will take time to stream and play in that case user gets paused till it stream and play. In the mentioned situation it has time delay to watch the video which user has requested. This technology has several disadvantages.

Some of the disadvantages are it always uses the maximum link capacity for video streaming and it cannot control the resolution. In case of weak signal user gets paused on the screen till video streams so cannot maintain constancy also in the video streaming.

IV. PROPOSED SYSTEM

In this we are explaining our ABSS cloud framework (Adaptive Bit Streaming Services) cloud consists of two parts:

AMOV: In this adaptive mobile video streaming where private agent for each mobile user will be created dynamically when the user log into the cloud. When user request the video present in the cloud, private agent will be created dynamically and adjust the bit rate for each mobile user makes the user the best possible video streaming experiences. HTTPS LIVE STREAMING (HLS) PROTOCOL along with TCP as transport protocol is used for streaming the video. HLS protocol is an HTTP based media streaming communication protocol. It works by breaking the overall stream into a sequence of small HTTP based file downloads, each download loading one short chunks of an overall potentially unbounded transport streaming. Transfer files will be created as .ts extensions at the server side. TS files contain separate code for interval of bit rates based on bandwidth. So that video will be streamed efficiently makes the user feels less buffering time and less delay. Hence the video will be streamed efficiently. In VOD, lost video packets will be recovered from TCP, as it resends the video packets which are lost.

Scalable video coding technique H.264 is used, as it maintains resolution of each mobile user by storing different bit rates of the same video contents. So it defines Base layer (BL) with multiple Enhance layer (EL). By SVC, a video can be decoded/played at the lowest quality if only BL is delivered based on screen resolution. In the mean while if more EL's are delivered, a better quality of video will be delivered.

At the client side, scalable video coding technique H.264 is used, as it maintains resolution of each mobile user by storing different bit rates of the same video contents. So it defines Base layer (BL) with multiple Enhance layer (EL). By SVC, a video can be decoded/played at the lowest quality if only BL is delivered based on screen resolution. In the mean while if more EL's are delivered, a better quality of video will be delivered.

Winscp module can be used to upload the video to the cloud. Manifest file keeps track of all the video details present in the cloud. Session descriptor protocol at the server side maintains each session details of client till the response for the client request.

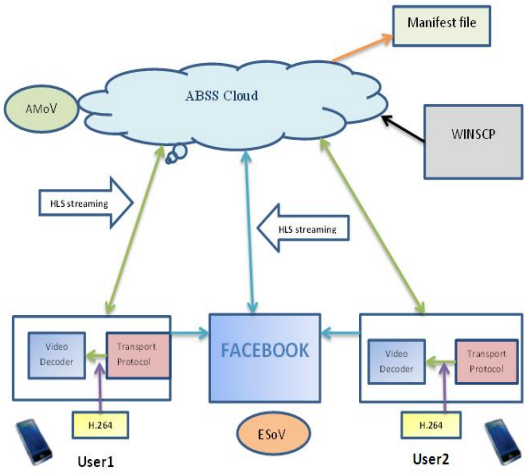


Figure 1. Adaptive Bit Stream Service Cloud Framework

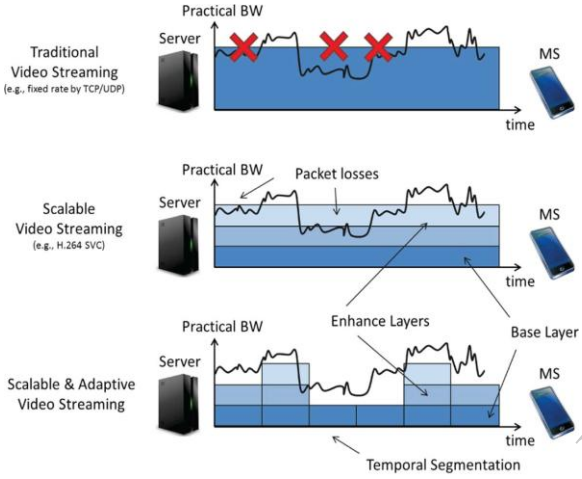


Figure 2. Comparisons of the traditional video streaming and scalable video streaming

The comparison between how efficiently the scalable and adaptive video streaming can be combined to provide the best possible video streaming as shown in figure 2.

ESOV: In the second part, ESOV users share their social video content in social network using ABSS cloud. Logged user can share the video with their friends.

- **Direct Recommendation:** Users can post URL of the video present in the cloud directly on the friend's timeline. So that they can watch the video in an efficient streaming manner.

- **Public Sharing**: User can share the video from their timeline by making video as public. So that all the public can stream the video efficiently.

Live streaming is an added advantage in our framework. HLS streaming protocol provides the user the best possible streaming of the video to multiple users in an efficient way when they connected to cloud.

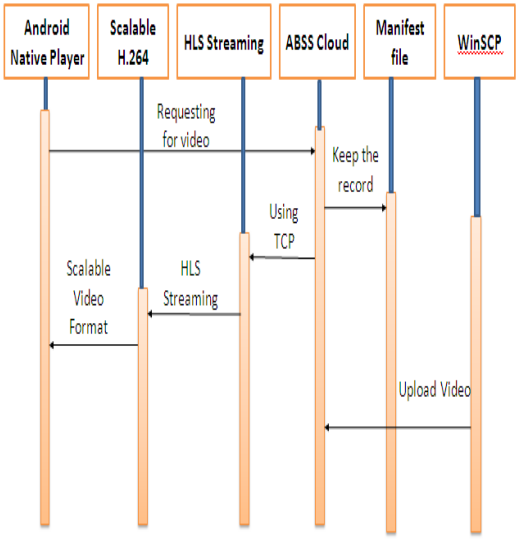
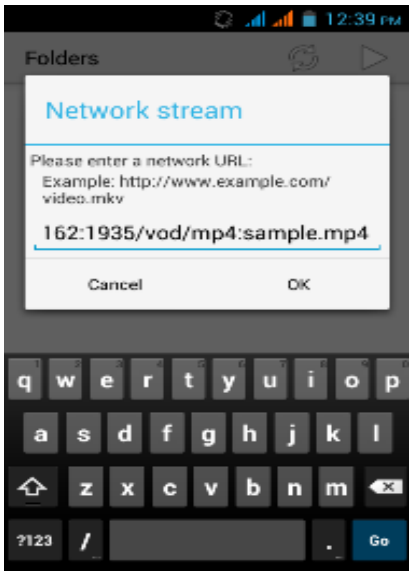


Figure 3. Sequence diagram for AMoV

Figure 3 shows the flow from the client request to the cloud till the response from the cloud. When the client request for the video present in cloud, it is a Video on Demand request. Session descriptor protocol will keep the record of the session at the server side. Manifest file will be updated for the session. Cloud will send the video through HLS streaming protocol with TCP as the transfer protocol. At the client side SVC will maintain the resolution of the mobile device and adjust in an efficient way and WinSCP will upload the new video to the cloud.

V. RESULTS

1. Send path of the video through Mxplayer.



By sending path of the video which is present in ABSS-Cloud server from the user's mobile Mxplayer, users can stream the best quality of video.

2. For social sharing we need to post the URL of the video present in the cloud on the friend's timeline.

3. For live streaming, capture the video by providing the stream name by connecting the cloud. Multiple users can watch the video at time without any disruptions.

VI. CONCLUSION

Scalable video coding and adaptive streaming techniques can be combined to accomplish effectively the best possible quality of video streaming services. This can dynamically adapts the bit streams based on the bandwidth, so that video will be streamed efficiently and at the client side video will be decoded based on the resolution of each mobile user using SVC. This Proposed System will reduce the traffic and it will provide the maximum utilization of the bandwidth capacity thus User can seamlessly enjoy the video streaming over weak or strong signal of (WI-FI/GPRS) without buffering. Users can also efficiently share or view the video in social networks without any disruptions or any long buffering delay.

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