An Efficient and Censored Adaptive Mobile Video Streaming for the Social Video Sharing in the Clouds

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Abstract

During the last two decades streaming in the internet has increased tremendously and transformation of the ancient technology into the mainstream technology. As demand for videos is increased, video traffic has increased rapidly over the video traffic, so the wireless link cannot maintain the traffic demand. The gap among the link capacity and traffic demand, time-varying link, leads to poor quality of video streaming in the networks of mobile which ultimately leads to disruptions and buffering time. As there is large development in technology special importance should to given to security of data for avoid the manipulation of information. The privacy and data protection should be provided to avoid misuse of data uploading which can harm emotions of user. The videos that are uploaded into the network should maintain high security and must be censored so as to avoid unauthorized leakage of private videos of the users. Thus, we propose a very efficient way of uploading videos by censoring the adultery and offensive video by providing the admin. The admin takes care of either accepting or rejecting the request from the user end before uploading the videos each time through his account. To make the user delight with the video services, this can be achieved by incorporating the cloud in the architecture by the service provider. The video cloud architecture is formed to specific application like providing the good video service to the user. The finest solution to the service providers to provide the uninterrupted network (i.e. the network without disturbance) for the customer for using video services is by incorporating video cloud.

Keywords: Scalable video coding, Adaptive video streaming, Mobile networks, social sharing, Cloud computing

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I. Introduction

Cloud computing is the modern technology which is available anywhere at any time along with easier maintenance, rapid scaling and lower costs. One of the key challenge in the cloud computation is security and confidence of the user data. The Microsoft made an analysis on the application of cloud for computing purpose, which includes about 58 percent of publics and 68 percent of business people but almost most of the people who make use of cloud for their office use step back by keeping a reason of data privacy in their mind. There are many issues among the rich computation in the cloud and user data protection. The main aim of the user is to get benefit from the cloud data and they also want to use the data by application with secured data. Two protection in the cloud are standardization of verifiable data and platform-level support. One of the major challenge is to maintain the protection of the rich computation cloud. The development of apps using the cloud data is a biggest hurdle which requires high experienced person and lot of resource required. The data protection must be provided by high security levels for avoiding misuse of data leakage in public networks.

The cloud computing period sovereignties with encroachments in technology, that offers numerous services to the individual essential and also it provides the more flexibility, more advantages than the traditional technology which were serving customers earlier and also able to support the advanced skills such as mobile computing which provide the immense pleasure to the customer who are getting service from the service provider and immense data. The services which are provided to the customer or user are coming to an end based on their strength, it provides many arrangements to the clients who has been to elected as vendor to slight scale business and cloud be accountable for the services should be provided with reasonable prize. By making the arrangements to meet the demands of customer which is keep on increasing every day.

The data produced from the last era is very much less than the data produced in a year. In the initial days we cannot supply large volume of data, that problematic is solved by familiarizing the hardware, if it is incorporated there should not be any restrictions but the situation states that if the resources present in the hardware are not used efficiently, sustaining the resources of the hardware is the thoughtful problem. Now a day in the field of computing the data usage has been changed drastically. The data which have been used for computing possess the data in bulky quantity, these methods need a relaxation in consumption of power. Depending upon the services provided to the user, the cloud will provide the resources like loading space and processing authority.

The current trend is moving towards Social Network Services (SNSs). There are many advance scheme to increase the quality of the content delivered using the Social Network Service. The SNSs have a provision of posting the video, liking and comment on photos or video which are posted by friends, relative or a employee-employee group but the user have a provision of viewing the video or ignore those. Consumers who using SNSs can follow the politician, CEOs or scientists based on their interests, which is probable to be watched by its groups for example twitter.

Over the past decade, increasingly more traffic is accounted by video streaming and downloading. In particular, video streaming services over mobile networks have become prevalent over the past few years [1].. While the video streaming is not so challenging in wired networks, mobile networks have been suffering from video traffic transmissions over scarce bandwidth of wireless links. Despite network operators' desperate efforts to enhance the wireless link bandwidth (e.g., 3G and LTE), soaring video traffic demands from mobile users are rapidly overwhelming the wireless link capacity. While receiving video streaming traffic via 3G/4G mobile networks, mobile users often suffer from long buffering time and intermittent disruptions due to the limited bandwidth and link condition fluctuation caused by multi-path fading and user mobility[2] [3] [4]. Thus, it is crucial to improve the service quality of mobile video streaming while using the networking and computing resources efficiently [5] [6] [7] [8]. Recently there have been many studies on how to improve the service quality of mobile video streaming on two aspects:

A. *Scalability:*

Mobile video streaming services should support a wide spectrum of mobile devices; they have different video resolutions, different computing powers, different wireless links (like 3G and LTE) and so on. Also, the available link capacity of a mobile device may vary over time and space depending on its signal strength, other users' traffic in the same cell, and link condition variation. Storing multiple versions (with different bit rates) of the same video content may incur high overhead in terms of storage and communication. To address this issue, the Scalable Video Coding (SVC) technique (Annex G extension) of the H.264 AVC video compression standard [9] [10] [11] defines a base layer (BL) with multiple enhance layers (ELs). These substreams can be encoded by exploiting three scalability features: (i) spatial scalability by layering image resolution (screen pixels), (ii) temporal scalability by layering the frame rate, and (iii) quality scalability by layering the image compression. By the SVC, a video can be decoded / played at the lowest quality if only the BL is delivered. However, the more ELs can be delivered, the better quality of the video stream is achieved.

B. *Adaptability:*

Traditional video streaming techniques designed by considering relatively stable traffic links between servers and users perform poorly in mobile environments. Thus the fluctuating wireless link status should be properly dealt with to provide 'tolerable" video streaming services. To address this issue, we have to adjust the video bit rate adapting to the currently time-varying available link bandwidth of each mobile user. Such adaptive streaming techniques can effectively reduce packet losses and bandwidth waste. Scalable video coding and adaptive streaming techniques can be jointly combined to accomplish effectively the best possible quality of video streaming services. That is, we can dynamically adjust the number of SVC layers depending on the current link status [9] [12].

However most of the proposals seeking to jointly utilize the video scalability and adaptability rely on the active control on the server side. That is, every mobile user needs to individually report the transmission status (e.g., packet loss, delay and signal quality) periodically to the server, which predicts the available bandwidth for each user. Thus the problem is that the server should take over the substantial processing overhead, as the number of users increases.

Cloud computing techniques are poised to flexibly provide scalable resources to content/service providers, and process offloading to mobile users. Thus, cloud data centers can easily provision for large-scale real-time video services as investigated in. Several studies on mobile cloud computing technologies have proposed to generate personalized intelligent agents for servicing mobile users, e.g., Cloudlet and Stratus. This is because, in the cloud, multiple agent instances (or threads) can be maintained dynamically and efficiently depending on the time-varying user demands.

Recently social network services (SNSs) have been increasingly popular. There have been proposals to improve the quality of content delivery using SNSs. In SNSs, users may share, comment or re-post videos among friends and members in the same group, which implies a user may watch a video that her friends have recommended. Users in SNSs can also follow famous and popular users based on their interests (e.g., an official facebook or twitter account that shares the newest pop music videos), which is likely to be watched by its followers. In this regard, we are further motivated to exploit the relationship among mobile users from their SNS activities in order to prefetch in advance the beginning part of the video or even the whole video to the members of a group who have not seen the video yet. It can be done by a background job supported by the agent (of a member) in the cloud; once the user clicks to watch the video, it can instantly start playing.

An adaptive video streaming and prefetching framework for mobile users with the above objectives in mind, dubbed AMES-Cloud is designed. AMES-Cloud constructs a private agent for each mobile user in cloud computing environments, which is used by its two main parts: (i) AMoV (adaptive mobile video streaming), and ESoV (efficient social video sharing). AMoV offers the best possible streaming experiences by adaptively controlling the streaming bit rate depending on the fluctuation of the link quality. AMoV adjusts the bit rate for each user leveraging the scalable video coding. The private agent of a user keeps track of the feedback information on the link status. Private agents of users are dynamically initiated and optimized in the cloud computing platform. Also the real-time SVC coding is done on the cloud computing side efficiently.

AMES-Cloud supports distributing video streams efficiently by facilitating a 2-tier structure: the first tier is a content delivery network, and the second tier is a data center. With this structure, video sharing can be optimized within the cloud. Unnecessary redundant downloads of popular videos can be prevented.

Based on the analysis of the SNS activities of mobile users, ESoV seeks to provide a user with instant playing of video clips by prefetching the video clips in advance from her private agent to the local storage of her device. The strength of the social links between users and the history of various social activities can probabilistically determine how much and which video will be prefetched.

II. REVIEW OF LITERATURE SURVEY

The practice of data has fully-fledged used to very huge calculation in current years. The studies displays us that, the number of information engender from the past ten years is all most three times the important as compared to capacity of data produced in previous single year. In early days we cannot store bulky quality of data, that problem is resolved by familiarizing the hardware where control are not measured instead the hardware resource should not be consumed commendably, one should preserve the resources as they are very much thoughtful problematic.

Nowadays the data used is for computing is faced extreme variation. The reason behind the consumption of large power is this source of data occupies large quantity of information. In specific, mobile video streaming systems are more prevailing as compared to few earlier years [1].

The major problem of video streaming occurs in the wireless network as compared to the wired network because video traffic communication takes more data usage and in wireless network there will be infrequent bandwidth. In spite of network machinists distressed struggles to enrich the bandwidth of wireless link so nowadays mobile manipulators are speedily covering the wireless link capability in the wireless networks.

While unloading the 3G/4G video traffic streaming in the mobile networks, the commonly suffered problems by the mobile users are limited bandwidth which causes to intermittent disruptions, multi-path fading which leads to fluctuation of link condition and long buffering [2] [3] [4]. It’s important to improve the mobile video streaming quality while using the resource computing efficiently and networking [5], [6], [7] and [8]. In recent times there are many studies where the study deals with improvement of the mobile video streaming and improve the class of the service keeping in mind about the two aspects are adaptability and scalability.

Mobile video streaming is the spectrum of mobile devices which gives the information of video resolutions, unlike wireless links, dissimilar computing powers and so on. Similarly, the accessible link may fluctuates over the space and time conditional to the signal asset, stream of traffic of the similar cell and dissimilarity link condition. Loading various versions of the identical content of the video might sustain high above in terms of communication and storage.

To address the dispute, SVC technique of the H.264 AVC [9] [10] deals with base layer (BL) along with the numerous Enhance Layers (ELs). Some of the scalability features which helps to manipulate sub streams are: (i) Spatial scalability which is done by the resolution of image layering which is called as (screen pixels). (ii) The frame rate layering which leads to progressive scalability and (iii) Image compression layering which leads to excellence in scalability. When only BL is delivered the video can be played/decoded by the SVC at lowermost quality. To achieve the high quality of video streaming the more ELs can be distributed.

Traditional video streaming methods framed by bearing in mind comparatively constant links of traffic services and mobile environment which performs the poorly performance. In the video streaming service which supports as the result of the changeable wireless link.

To solve this problem of the mobile users, we have to correct the adaptive video bit rate which deals with the time-varying obtainable bandwidth link. If the bandwidth is unused then packet losses can be successfully reduced by the ascendable video coding. Adaptive streaming and scalable video systems can be mutually shared to complete efficiently the best probable quality to the service of video streaming. The present link status can be enthusiastically corrected the quality of the layers of SVC [9].

There are two different streaming, one is real-time and additional is pre-recorded streaming. Some of the rules used for design, for good quality of streaming persistence is UDP (User datagram Protocol), which brings the multimedia new as a categorization of the smaller packets [4]. In the RTP stack, the mainstream of protocol transport accomplished remains in the implemented transport for the video streaming.

Though most of the recommendations looking into mutually uses the adaptability and scalability to the active controller to the server side. The meaning of this is every mobile users must independently report the status of the transmission for example signal quality delay, packet loss. This assigns the bandwidth to the different mobile users and server maintains the proper traffic of the mobile users and hence the quality can improved.

III. IMPLEMENTATION

A. *Matching Algorithm between BW and Segments*

- i = 0
- BW0 = RBL

- Transmit
- BL0
- Monitor BW0(practical)
- repeat
- Sleep for Twin
- Obtain pi, RTTi, SINRi etc., from client's report
- Predict BW i+1 (estimate) (or BW i+1 (estimate)= BWi (practical))
- k=0
- BWEL= 0
- repeat
- k++
- if k >= j break
- BWEL=BWEL + RELk
- until BWEL >= BW i+1 (estimate) - RBL
- Transmit BLi+1 and EL1i+1, EL2 i+1,……. Elk- 1i+1
- Monitor BWi+1(practical) i++
- until All video segments are transmitted.

B. MODULES

Three different types of modules that considered are Admin, User1 and User2 Module
Modules Description:

1) Admin Module:

In this portion the Admin is perceived by have three sub modules. They are as per the following

- Upload Video: Now Admin can include another video. It is utilized for client intended for survey more accumulations.
- User Details: Management can perception to client those who have enlisted here.
- Rate recordings: The portion for staying away to unpredicted recordings from clients. After acknowledge/reject recordings then no one but client can or can't see their own particular record

2) User Module:

This section deals with the user1 subsequent modules, as per the following,

1) News Feed: In this client of social site could see status on or after his companions like recordings or messages.
2) Look Friends: In this friends can chase for companions and can send an interest to them, additionally can see their subtle elements.
3) Offer Video: They can impart recordings to his companions by including new recordings likewise with companions they share messages.
4) Redesign Details: The client can overhaul their own particular subtle elements.

3) User2 Module:

The name, Password, gender, age details can be listed by user in this segment. By accepting or sending the friend request can be marked by user. The comments and videos can be shared by user.

IV. CONCLUSION

An efficient and censored adaptive mobile video streaming for the social video sharing with Video frame where it resourcefully stores videos and proposal the cloud computing to build individual of the mobile user applications from private agents which tries for dealing an non-terminating videos streaming to sidestep link quality variation which is established on SVC technique. Though it is efficient for censoring the video to avoid exploitation of data that can advance seek to deliver a video streaming by experience insistent of functions between entirely the mobile users. We estimate the social video sharing in Cloud for the putting into practice and shows a cloud computing technique how it fetches important enhancement to improve the adaptive of the mobile streaming.

REFERENCES

[1] CISCO, "Cisco Visual Networking Index : Global Mobile Data Traffic Forecast Update , 2011-2016," Tech. Rep., 2012.
[2] Y. Li, Y. Zhang, and R. Yuan, "Measurement and Analysis of a Large Scale Commercial Mobile Internet TV System," in ACM IMC, pp. 209–224, 2011.
[3] T. Taleb and K. Hashimoto, "MS2: A Novel Multi-Source Mobile-Streaming Architecture," in IEEE Transaction on Broadcasting, vol. 57, no. 3, pp. 662–673, 2011.
[4] X. Wang, S. Kim, T. Kwon, H. Kim, Y. Choi, "Unveiling the BitTorrent Performance in Mobile WiMAX Networks," in Passive and Active Measurement Conference, 2011.
[5] A. Nafaa, T. Taleb, and L. Murphy, "Forward Error Correction Adaptation Strategies for Media Streaming over Wireless Networks," in IEEE Communications Magazine, vol. 46, no. 1, pp. 72–79, 2008.

[6] J. Fernandez, T. Taleb, M. Guizani, and N. Kato, "Bandwidth Aggregation-aware Dynamic QoS Negotiation for Real-Time Video Applications in Next-Generation Wireless Networks," in IEEE Transaction on Multimedia, vol. 11, no. 6, pp. 1082–1093, 2009.
[7] T. Taleb, K. Kashibuchi, A. Leonardi, S. Palazzo, K. Hashimoto, N. Kato, and Y. Nemoto, "A Cross-layer Approach for An Efficient Delivery of TCP/RTP-based Multimedia Applications in Heterogeneous Wireless Networks," in IEEE Transaction on Vehicular Technology, vol. 57, no. 6, pp. 3801–3814, 2008.
[8] K. Zhang, J. Kong, M. Qiu, and G.L Song, "Multimedia Layout Adaptation Through Grammatical Specifications," in ACM/Springer Multimedia Systems, vol. 10, no. 3, pp.245–260, 2005.
[9] M. Wien, R. Cazoulat, A. Graffunder, A. Hutter, and P. Amon, "Real-Time System for Adaptive Video Streaming Based on SVC," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 17, no. 9, pp. 1227–1237, Sep. 2007.
[10] H. Schwarz, D. Marpe, and T. Wiegand, "Overview of the Scalable Video Coding Extension of the H.264/AVC Standard," in IEEE Transactions on Circuits and Systems for Video Technology, vol. 17, no. 9, pp. 1103–1120, Sep. 2007.