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SNS Based Adaptive Mobile Video Streaming and Efficient Social Video Sharing in the Clouds

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Abstract -- **The mobile phones grow to be an essential part of our everyday life, with smart phone sales at present greater than before very much and also user demands to run lots of applications have enhanced. The victory of next invention mobile phone communication based on the capability of service suppliers to engineer innovative added worth to video services. The Streams are programmed by the Scalable Video Coding expansion of the H.264/AVC model. Adding or removing the layer is determined on the basis of user behavior environment of the mobile system. The current advances in the mobile video streams greater than mobile networks have been souring more than these new trends, the wireless connection service not basically hold up with the rising traffic demand. The hole among the traffic load and the wireless connection facility, along with time-changeable link circumstances, results reduced superiority of mobile video streams more than mobile networks, such as extensive buffering delays and discontinuous disruptions. The innovative cloud computing technology, we suggest a novel framework to get enhanced quality of video services for the mobile users, which has two parts: A newly distributed web User Behavior Prediction model is bring in to cognize and guess user Behavior and additional Adaptive Policy Prefetching and caching method is addressed for a well-organized cloud supervision. We can able to apply a new framework model to illustrate significant development in terms of lesser loss rate, decrease delay and buffering time. For all mobile user, make a private agent in the cloud data center to alter the mobile video streams flow by the Scalable Video Coding method based on the reply from the mobile customer and perform the video prefetching based on the social network examination. In addition, the essential tools for providing temporal, spatial, and quality are described in feature and experimentally analyze their difficulty and effectiveness.**

Keywords- **Scalable Video Coding, Adaptive Video Streaming, Mobile Networks, Social Video Sharing.**

I. INTRODUCTION

The move ahead of wireless system is rotating vast do research concentration into enormous profitable success. Mobile Cloud Computing (MCC) has transformed the way in which mobile customer across the world control services. Accessible mobile users left from predictable applications by supporting hardware, 3D virtual surroundings, and huge storage capacity; also users share the cloud communications to their friends. MCC put the cloud computing into the mobile atmosphere and over comes barriers linked to performance (e.g. battery living, bandwidth, service delay and storage), surroundings (e.g. scalability, heterogeneity, availability) and security (e.g. reliability and privacy). Thanks to the raise of grand video compression method such as H.264 and MPEG-4, it is currently achievable to join audio, video and data in the same signal and transmit it over packet based wireless arrangement. This technology can suggest these hardware resources inexpensively [1]. The extra amount of traffic is accounted by mobile video streaming and downloading of videos due to fast progress of mobile devices, numerous persons are concerned to the streaming services on mobile phones and tablets whereas travelling in buses, cars and trains. Especially, mobile video streams over mobile system turn into widespread over the ancient times. For example, services suppliers can additional raise their consumer base by growing the range they offer excellence of service facilitate mobile video services over wireless association. Providing QoS promise is a most important crucial in growing viable business models, as serving a vast amount of users is a noticeable business goal. The system operators desperate hard to get better in the wireless connection bandwidth, elevated video traffic delay from mobile handset users are quickly consuming the wireless system capability. The video streaming is not complicated in wired arrangement, however the mobile system suffering from video traffic load overload of not enough bandwidth of wireless set-up. Mobile group of HSPA, LTE and WiMAX are possible to give precise throughput to the mobile users if system delay is small. SVC in mobile arrangement is a method to common sense shifting channel situation and construct a decision on the fitting transmission rate such that the correct number of layers to be added or removed can be determined. Whereas receiving the mobile video streams via 3G/4G mobile set-up, users are repeatedly suffer from irregular disruptions and extended buffering load. 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 user's 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 sub streams 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. Adaptability: Traditional video streaming techniques designed by considering relatively stable traffic links between servers and users, perform poorly in mobile environments [2]. 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.

II. RELATED WORK

1. **Types of Adaptive Video Streaming Techniques**

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 [27] is a live adaptive streaming service which can 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 are also some similar adaptive streaming services where servers controls the adaptive transmission of video segments, for example, the Quavlive Adaptive Streaming. However, most of these solutions maintain multiple copies of the video content with different bit rates, which 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 [28] [29], where TCP throughput 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 can be adjusted. A rate adaptation algorithm for conversational 3G video streaming is introduced by [30]. Then, a few cross-layer adaptation techniques are discussed [31] [32], which can acquire more accurate information of link quality so that the rate adaptation can be more accurately made. However, the servers have to always control and thus suffer from large workload. Recently the H.264 Scalable Video Coding (SVC) technique has gained a momentum [10].

An adaptive video streaming system based on SVC is deployed in [9], which studies the real-time SVC decoding and encoding at PC servers. The work in [12] 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, Cloud Stream mainly proposes to deliver high-quality streaming videos through a cloud-based SVC proxy [20], 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. The cloud--

2. Mobile Cloud Computing Techniques

One--to provide video streaming services, especially in the wired Internet because of its scalability and capability [13]. For example, the quality-assured bandwidth auto-scaling for VoD streaming based on the cloud computing is proposed [14], and the CALMS framework [33] is a cloud- assisted live media streaming service for globally distributed users. However, extending the cloud computing-based services to mobile environments requires more factors to consider: wireless link dynamics, user mobility, the limited capability of mobile devices [34] [35]. More recently, new designs for users on top of mobile cloud computing environments are proposed, which virtualize private agents that are in charge of satisfyinh the requirements (e.g. QoS) of individual users such as Cloudlets [21] and Stratus [22]. Thus, we are motivated to design the AMES-Cloud framework by using virtual a gents in the cloud to provide adaptive video streaming services.

III. AMES-CLOUD FRAMEWORK

In this section we--the whole video storing and streaming system in the cloud is called the Video Cloud (VC). In the VC, there is a large-scale video base (VB), which stores the most of the popular video clips for the video service providers (VSPs). A temporal video base (tempVB) is used to cache new candidates for the popular videos, while tempVB counts the access frequency of each video. The VC keeps running a collector to seek videos which are already popular in VSPs, and will re-encode the collected videos into SVC format and store into tempVB first. By this 2-tier storage, the AMES-Cloud can keep serving most of popular videos eternally. 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 [36]. There is also encoding function in subVC (actually a smaller-scale encoder instance of

the encoder in VC), 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. Note that 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 [36]. 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 [36]. There is also encoding function in subVC (actually a smaller-scale encoder instance of the encoder in VC), 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. Note that each mobile device also has a temporary caching storage, which is called local video base (localVB).

IV. ADAPTIVE MOBILE VIDEO SERVICES

In this paper, we will study and arrangement with the future techniques for user behavior based adaptive mobile video services, which create personal agents for active users in the mobile cloud, so as to propose "non-terminating" and "non-buffering" mobile video streams to the mobile customers. The private agents are elastically start and optimized in the cloud computing surroundings. In addition the real-time SVC coding formed on the cloud side forcefully. Our proposed arrangement leverages the SVC technique propose the scalable and adaptive mobile video streams by calculating the mixture of video streaming (layers) based on the variable relationship situation from the mobile users on the basis of user needs and supervise the link position on the basis of user movement. The control of the social friends among mobile users in the construction and the history of social actions can decide which video and how much perfected. We categorize the paper as follows: first give explanation the private agent structure and provides details of user behavior based adaptive mobile video streaming and caching method is addressed for well-organized cloud administration. Then the little delivery process is showing, and we talk about performance assessment of our scheme.

V.ADAPTIVE MOBILE VIDEO STREAMING PROPOSAL

The total video storing and streaming of videos in the cloud is called the Video Cloud (VC). In the VC, there is a vast Video Base (VB), which supplies current popular video clips from the video service providers (VSPs). A short-term Video Base (temp VB) is used to cache fresh candidates for trendy videos. The VC also maintains administration of an investor to find out the popular videos from the VSPs, and re-encode the collected videos into SVC plan and accumulate into temp VB. In particular for each lively user, a sub-Video Cloud (sub VC) fashioned with enthusiasm since there is any video streams require from the mobile user. Every sub-VC has a sub- Video Base (sub VB), which stores all the newly fetched video segments. The video deliverance among the sub VCs and the VC in a number of cases are in truth not "copy" but just "link" procedure of the interrelated file forever surrounded by one cloud data center. Even a little cases video is artificial from one data center to another, it will be exceptionally fast. Throughout the mobile video streaming, users will always infrequently account wireless connection situation to their resulting sub VCs, and then make calculation of the accessible bandwidth of next time window and exact the grouping of BL and ELs adaptively. The extra amount of traffic is accounted by mobile video streaming and downloading of videos due to fast progress of mobile devices, numerous persons are concerned to the streaming services on mobile phones and tablets whereas travelling in buses, cars and trains. Especially, mobile video streams over mobile system turn into widespread over the ancient times. For example, services suppliers can additional raise their consumer base by growing the range they offer excellence of service facilitate mobile video services over wireless association. Providing QoS promise is a most important crucial in growing viable business models, as serving a vast amount of users is a noticeable business goal. The system operators desperate hard to get better in the wireless connection bandwidth, elevated video traffic delay from mobile handset users are quickly consuming the wireless system capability. The video streaming is not complicated in wired arrangement, however the mobile system suffering from video traffic load overload of not enough bandwidth of wireless set-up. Mobile group of HSPA, LTE and WiMAX are possible to give precise throughput to the mobile users if system delay is small. SVC in mobile arrangement is a method to common sense shifting channel situation and construct a decision on the fitting transmission rate such that the correct number of layers to be added or removed can be determined. Whereas receiving the mobile video streams via 3G/4G mobile set-up, users are repeatedly suffer from irregular disruptions and extended buffering load due to the deficient bandwidth and relation state variation by user mobility and multi-path departure. The researchers are appear to be attracted in the cause of QoS for mobile video streams and design innovative technique for carry out better performance [4]. At present a lot of study planned and how to raise the service quality of video streams of mobile system. 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 organizes in 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 program 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 user dynamically initializes to stream a video cartridge, cloud mediator will be agent be rapid widespread for that mobile user. The mobile clients continue tracks metrics, together with signal control, and bandwidth and packet loss, under assured duty cycle.

VI. CONCLUSION AND FUTURE WORK

Our proposal of the user behaviour prediction based mobile video streaming and social video sharing which cost-effectively stores and gets back videos from the cloud to create private agent for lively mobile user try to watch "nonterminating" mobile video streaming by regulate based on the mobile user behaviour. This computing system brings essential enhancement to the mobile adaptability and scalability. Concerning the potential work, we will carry out large-scale operation on energy and price cost on the basis of mobile users. Also we try to make bigger our framework with more concerns of safety measures and privacy. The focus of this paper is to authenticate how cloud computing can get better the transmission adaptability and prefetching mobile users. In addition, we will also try to improve the security issues in the AMES-Cloud.

VII. REFERENCES

[1]. K. Zhang, J. Kong, M. Qiu, and G.L. Song, "Multimedia layout adaptation through grammatical specifications," ACM/Springer Multimedia Syst., vol. 10, no. 3, pp. 245-260, 2005.

[2]. N. Davies, "The case for VM-Based Cloudlets in mobile computing," IEEE Pervasive Computing, vol. 8, no. 4, pp. 14-23, 2009.

[3]. A. Zambelli, "IIS smooth streaming technical overview," Microsoft Crop., 2009.ides and J. C. Love, 2001.

[4]. Y. Li, Y. Zhang, and R. Yuan," Measurement and analysis of a large scale commercial mobile Internet TV system," in Proc. ACM Internet Meas. Conf., 2011, pp 209-224.

[5].T. Taleb and K. Hashimoto, "MS2: A novel multisource mobile streaming architecture," IEEE Trans. Broadcasting, vol. 57.

[6].X. Wang, S. Kim, T. Kwon, H. Kim, and Y. choi, "Unveiling the bit torrent performance in mobile WiMAX networks," in Proc. Passive Active Meas. Conf., 2011, pp.184-193.

[7].A. Nafaa, T. Taleb, and L. Murphy, "Forward error correction adaptation strategies for media streaming over wireless networks," IEEE Commun, Mag., vol. 46, no. 1, pp. 72-79, Jan. 2008.

[8]. K. Zhang, J. Kong, M. Qiu, and G.L. Song, "Multimedia layout adaptation through grammatical specifications," ACM/Springer Multimedia Syst., vol. 10, no. 3, pp. 245-260, 2005.

[9]. G. Stix, 2001. "Little Big Science". Scientific American, September. London.

[10] P. McDonough, C. Vallati, A. Pande, and P. Mohapatra, "Quality-oriented scalable video delivery using H.264 SVC on an LTE network," in Proc. WPMC, 2011.

[11] H. Schwarz, D. Marpe, and T. Wiegand "Overviewof the Scalable video coding extension of the H.264/AVC standard," IEEE Trans. Circuits Syst. Video Technol., vol.17, no. 9, pp.1103-1120, Sep.2007.

[12] A. Balasubramanian, R. Mahajan, and A. Venkataramani, "Augmenting mobile 3G using WiFi," in Proc. ACM MobiSys, 2010, pp.209 -222.

[13] F. Benevenuto, T. Redrigues, V. Almeida, and J. Almeida, "Video interactions in online social networks," ACM Trans. Multimedia Computing, Commun, Applic., vol. 5, no. 4,pp. 30-44, 2009.

[14] J. M. Kang, S. S. Seo, and J. W. Hong, "Personalized battery lifetime prediction for mobile devices based on usage patterns," J. Computing Sci. Eng., vol. 5, no. 4, pp. 338-345, 2011.

[15] S. Chetan, G. Kumar, K. Dinesh, K. Mathew, and M. A. Abhimanyu, "Cloud Computing for Mobile World,"2010.

[16].G. Wang and T. E.Ng, "The impact of virtualization on network performance of amazon EC2 data center," in Proc, IEEE INFOCOM, 2010, pp. 1163-1171.

[17] V. Singh and I. D. D. Curcio, "Rate adaptation for conversational 3G video," in Proc. IEEE INFOCOM Workshop, 2009, pp. 205-211.

[18] Y. Chen, L. Qiu, W. Chen, L. Nguyen, and R. Katz, "Clustering web content for efficient replication," in Proc. IEEE ICNP, 2002, pp. 165-174.

[19] "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016," CISCO, 2012.

[20] Q. Zhang, L. Cheng, and R. Boutaba,"Cloud Computing: State of the art and research challenges," J. Internet Services Applic., vol. 1, no. 1, pp. 7-18, Apr. 2010.