SURVEY ON AMES: ADAPTIVE MOBILE VIDEO STREAMING AND EFFICIENT SOCIAL VIDEO SHARING IN THE CLOUDS

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ABSTRACT

The media data has grown over years in all streams of technology. Video and imagesplays a vital role in communication around the globe. The usage of mobile device along with media has boomed year age of technology. The usage of traditional networking and service providers lacks to provide the quality centred and reliable service to the mobile users concerning with the media data. The vital problems that leads to the poor services from the service providers would be low bandwidth which affects the efficient transfer of video to the user, the disruption of video streaming also occurs due to the low bandwidth. The buffer time of the video over mobile devices which moves from place to place affects the smooth streaming and also sharing of video from one user to another user over social media. Our survey shows the functioning of various methods and architecture which used cloud to provide effective solution for providing better service to the users. AMES is cloud architecture built specially to provide video service to the user. The study has came up with a optimal solution, proposing with video cloud, which collects the video from video service providers and providing the reliable service to the user.

I. INTRODUCTION

The era of cloud computing reigns with advancements in technology, the technology provides various services to the human's need and also it urges the more necessity for the emerging technology. Cloud computing provides a platform for other advanced technologies like bigdata, mobile computing to inculcate its service and provide the QoS to the customers. The cloud has grown to a vast extend over the period of years. All the services that are provided to thecustomer are done using could as their backbone, it give vast amount of resources and infrastructure to consumer who acts as vendors to small scale business and cloud could provide services to fully fledged organization with less cost.Organizing the service and extending the service depending upon the growing needs of the customer cloud be achieved by cloud service and infrastructure[1,5]. The major issue is the resources, while any service needs to be extended, there sources with the service vendor plays a vital role. Investing huge sum of dollars on hardware is just one part of extension, maintaining the hardware along the services provided would carry tons of dollars. Where cloud provides space for extending the services as a service provider and also it can provide infrastructure service to small scaleservice vendors. The era of hardwarelimitation has vanished, new age has begun the hardware limitation are not considered but the situation turns out that, ifthe hardware resources are not utilized effectively, maintain the resourcesbecomes very serious problem. The data thatis being used

among the computing world has faced drastic change. These data occupies large amount of data, needvery heavy processing powers. All the needed resources such as storage space and processing power are provided by the cloud and can be extended depending upon the service. The problem doesn't rise until these data are transferred on the internet. The data created on the host, should be sent to the cloud for storage, the problem of data transfer with these high ended multimedia data starts. in this paper we are in particularly going to focus on the videos , video – data.

The processing and transferring of video to the service provider and between hosts became an issue. As the usage of video data over the years have increased, the management of resources supporting the video data service has tobe monitored and extended for providing reliable service. The trend in the technology changes as per the needs of the users. Users are comfortable with the mobile and portable devices than stationary hosts[6][9][10].The problem with providing service to the mobile device, user is unavailability to service reaching the user in constant range. Since the location of the user changes every second of the time, the bandwidth of their network also changes constantly due to various reason and main reason would be change in location. Providing quality oriented service to the mobile users are far difficult than to wired users. The mobile devices which works under mobile network follows and entirely different path in providing service to its users. The mobile devices plays most important roles in the upcoming technologies around the computer science and technology. Any methodology or technology that has been developed are enhanced for mobile technology, the mobile devices provides various comfortably to the user in providing service. the devices itself are handy to be used. the user does not need to be stationed in one place or has to be waiting in place to get the service. The cloud computing technology supports its entire service for mobile devices. As the type of data changes from text to multimedia data such as video, the devices are also changes from laptop to smart phones[2].

II. ADAPTIVE AND EFFICIENT VIDEO STREAMING AND SHARING IN CLOUD

The figure 1 shows the architecture of the adaptive and efficient way of enhancing the video streaming and sharing of video to the mobile users. The architecture was constructed based on the video service provided in cloud called as AMES. The architecture contains

A. Video service provider (VSP) : the originated place of actual video data. It used the traditional video service provider. VSP can handle multiple request at the same time, while coming to the QoS with the mobile users , the VSP does not provide service up to the mark.

B. Video cloud (VC): the cloud step up has been established with many components working together , virtually to get the original video data from the VSP and provide the reliable service to the mobile user and it also provides availability of video and makes the sharing of those videos among the users much easier.

C. Video base (VB): Video base consists of the video data that are provided as the service to the mobile users in cloud.

D. Temp video base(TVB): it contains the most recently accessed video data and it also contains most frequently accessed video data.

E. Vagent: it is an agent created for every mobile user who requests for the video service to the video cloud.

F. Mobile users: the users who are mobile and providing the availability of the service to their location is difficult.

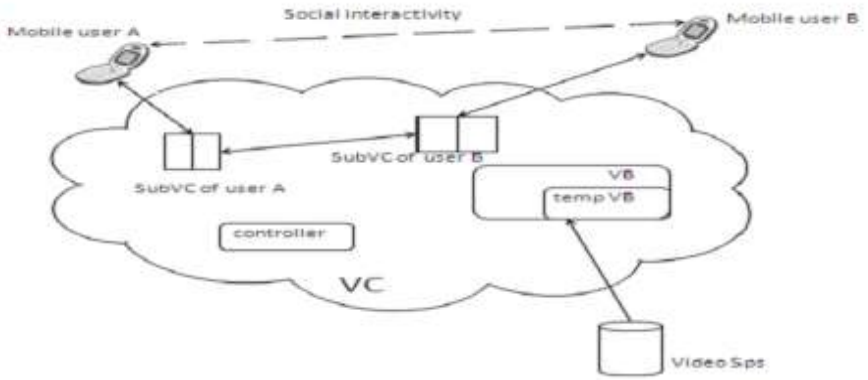

Figure1. VC architecture

The video cloud provides services under two main methodologies adaptive mobile video streaming and efficient mobile video sharing. The video streaming and video sharing plays the vital role in providing the reliable service to the customers. The rate in which frames of the videos are streams determines the quality and availability of the video service. Video data are most commonly shared among the users in the network. Mobile users are most commonly found to use social networking sites more offently[6,7]. The mobile device and mobile computing provides them space to be connected on the social network. Multimedia data such as images and videos are shared among the friend and users of the social media. The request of the video and sharing of video are two main action requested from customer. Video cloud provides platform to provides these two service in better way.The video service provider (VSP) contains the raw video data , the videos available in VSP can be used to service the customer's request. But VSP does not have sufficient resource to provide QoS and better video sharing among mobile devices and users. The Video cloud (VC) contain video base (VB) which collect the requested videos from the VSP and keeps the copy of the video , so as the request for the videos can be services. The Temporary video base (TempVB) stores the link of the videos that are accessed more recently and frequently, the links provides faster access to the videos on the VB. The controller plays the important role of managing the working and coordination of all the components on the video cloud and mobile users[2,7,10]. For every mobile user who comes for the service in cloud, one agent is created Vagent. This video agent is responsible for processing the user's request and delivery the servers' response to the user. The requested videos link will be saved in vagent for retransmission and for services if the same videos are requested again by the client. The Vagent can communicate among themselves for providing adaptive streaming of services. The video source or link available to one Vagent can be accessed and used by another Vagent. The mobile user can also communicate among themselves. The social interaction are carried out, the sharing of videos are also tracked and carried out through the Vagent of each user. Hence tracking of the video source availability and provides video to the requested user becomes easier. The video sharing in social media becomes efficient for video streaming.

2.1 Scalable video coding

SVC is an extension to the H.264/AVC standard. It is classified as a layered video codec which can encode a video stream in several types and numbers of enhancement layers on top of the H.264/AVC-compatible base layer. These enhancement layers can be added or removed from the bit stream during streaming without re-encoding of the media. The transmission rate of scalable video streams in the

mobile network can be controlled by using TCP- friendly rate control. The streams are encoded using the Scalable Video Coding (SVC) extension of the H.264/AVC standard. Adding or removing the layers is decided based on the TFRC during varying channel conditions of the mobile network SVC provides a high quality multimedia communication services inheterogeneous network environment, especially when the client processing power, system resources, and network state unknown.

2.2 TFRC

The bit rate of the stream can be dynamically adapted to the changing channelconditions which greatly improves all performance indicators such as interruption time, loss rate, delay and buffer requirements. This also implies that more users could be admitted to the cell and it would still be able to guarantee certain service qualities. This is especially true in loaded situation where there are not enough radio resources to combat bad reception quality in order to maintain guaranteed throughput to some users. However, since the TFRC was not designed for a mobile environment, we expect that it can be further optimized.

2.3 H.264/SVC

In the scalable video coding extension of the H.264/AVC standard, an exhaustive search technique is used to select the best coding mode for each macro block. This technique achieves the highest possible coding efficiency, but it demands a higher video encoding computational complexity which constrains its use in many practical applications. This proposes combined fast sub-pixel motion estimation and a fast mode decision algorithm for inter-frame coding for temporal, spatial, and coarse grain signal-to-noise ratio scalability. The correlation is used between the macroblock and its enclosed partitions at different layers. It has been observed that there is a highcorrelation between the MB and its enclosed partitions when estimating the motion at different resolutions. Therefore a two step fast sub-pixel motion estimation scheme based on this observation has been developed.

III. PERFORMANCE ANALYSIS

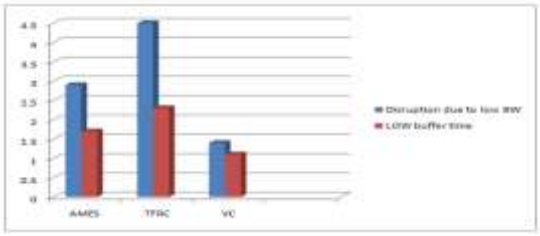

Figure 2. Comparison of Performance

The performance of video cloud is better than the previously used techniques. Weconsider the comparison of AMES Cloud and TFRC to our proposed method Video Cloud. The working of the AMES and VC are more equal and most of the extra loaded components which are found in AMES are reduced[5]. Vagents carry out most of the pre-processing of the video streaming sharing in media. Vagents alsoprefetch the requested video by the user from TempVB or VB for providing better services. TRFC does not provide any dedicated method to improved the service to the user, it tells how the transfer medium could be monitored and bandwidth level could be negotiated so as the data transfer can be achieved very

efficiently[3][13] . The over comparison of the services provided based on bandwidth and buffer time is considered. Figure 2 show the graph of VC provides better result than AMES . the disruption due to low and varying bandwidth , the buffer time at the client side usually takes long time due to delay in perfecting of video from service provider, VC provides Vagent to minimize it comparatively.

IV. CONCLUSION

Multimedia data has occupied vast empire in the growing technology of computing. The latest technology in handled devices also increases rapidly day by day. The entire computing and social media are made compactable in the arm of a man using mobile devices. The usage such devices also increased the change in usage of data format from textual to multimedia data main video and images and audios. The video place more important in convey most of the information in its content. The usage of such video has increased varying over the years.The mobile users requests the video service which could a video file, it could be video call. The service isbeen provided by the traditional service providers who has the video servicing resource. But when number request and amount of data increases the service providers way of processing the request does not provide optimal service to the user. Other than mentioned problem, there are various other issues such as disruption due to low bandwidth and unknown buffer time. The serviceprovider cant handles external issues as mention to provide quality oriented service and availability of resource to the customer. The cloud environment default provides adaptable and optimal infrastructure to any cloud user. The video serviceprovider is added as one of the resource in video cloud. The cloud base and Vagents plays vital role in keep track of videos and updating the link so as to provide undisrupted service to the customer. It also provides better video sharing in social media, where the transmissions of videos are highly carried out.

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