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Cloud based Socio-tube

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ABSTRACT

Today world is Cloud. Cloud computing is now considered a major commanding hosting platform in numerous areas including mobile computing. Several mobile television systems have sprung up in current years, motivated by hardware as well as software progression in mobile devices. By delegating towards cloud of communications as a provision, mobile television becomes familiarized to streams intended in aid of a variety of applications. We intend CloudMoV to effortlessly make use of agile resource support as well as prosperous functionalities obtainable by Infrastructure-as-a- Service cloud and Platform-as a-Service cloud. The system is capable to attain an important power saving, by opportunistically switching device among high-power as well as low-power transmission modes throughout streaming.

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I. INTRODUCTION

Many mobile social or media applications have been launched recently, but most popular app like Twitter, Facebook have large demand among users. But there are some limitations in the current mobile and wireless technologies, in which unstable connection bandwidth and lifetime of battery are some of the problems. Cloud computing provides low-cost, agile scalable resource supply and power efficient mobile communication. Cloud can reduce load of computation and other tasks which is involved in a mobile application. This significantly reduces battery consumption of the mobile devices. Cloud-MoV effectively utilizes the cloud computing to offer a living room experience of video watching just as users are watching Television at their homes. In mobile social television, mobile users can import video on demand or a live to watch from any streaming site like Vimeo, Ustream ,YouTube and invite their family and for watching the video concurrently and chat with each other while enjoying the video. In traditional system each users uses dish-TV, set boxes for digital broadcasting of channels. The Cloud-MoV utilizes agile resource support and the functionalities which are provided by both an Infrastructure-as-a-Service (IaaS) cloud and a Platform- as-a-Service (PaaS) cloud. It therefore blends social awareness and co-viewing experience among friends on the go. As opposed to traditional Television watching, mobile social Television is well suited to today's life style, where family and friends may be separated geographically but hope to share a co-viewing experience. While social Television enabled by set-top boxes over the traditional TV systems is already available for us, it remains a challenge to achieve mobile social Television, where the at the same time as viewing experience with friends is enabled on mobile devices.

The design achieves following goals.

1. Encoding Flexibility
2. Battery Efficiency
3. Spontaneous Social Interactivity
4. Portability

II. RELATED WORK

Many mobile television systems have been popular in recent years with advanced software and hard wares in mobile devices. Some systems [3] bring living room experience to the small screens on the move but they more focused on the how to deliver the content and which technology is used but they

never focused on the limitations of mobile devices. Coppens added social interactions [8] to the television but the design is limited to traditional broadcast channels. Schatz designed mobile social television [14] which is for DVB-H networks and symbian devices and it not support wider audience. The design of cloud based novel mobile social television supports all internet based video programs i.e. on demand video and live TV with HTML5 compatible browsers and supports a wide range of devices, without any other mandatory components on the devices. Minimizing power consumption is the one of the major challenge for any application in mobile devices. It is able to select the correct tradeoff between application quality and energy conservation by monitoring energy supply and demand[9]. Amigo TV combines broadcast television and community with rich communication in order to leverage a social experience [1]. Cloud computing having a most powerful platform in mobile computing. In cloud computing mobile devices workload is offloaded to rich resource infrastructures in dynamic synthesis. The cloud based mobile social television is designed based on the cloud computing. Cloudmov uses both platform as a service and infrastructure as a service to offer living room experience to a group of people who interact socially while watching the video and sharing the video.

III.CLOUDMOV: ARCHITECTURE AND DESIGN

As a novel Mobile-Social TV system using cloud computing (CloudMoV), provides two major functionalities to participating mobile users: (1) Universal streaming: A user can stream a live or on-demand video from any video sources he chooses, such as a TV program provider or an Internet video streaming site, with tailored encoding formats and rates for the device each time. (2) Co-viewing with social exchanges: A user can invite multiple friends to watch the same video, and exchange text messages while watching. The group of friends watching the same video is referred to as a session. The mobile user who initiates a session is the host of the session. The architecture of CloudMoV and the detailed designs of the different modules is presented in the following.

A. Key Modules

Fig. 1 gives an overview of the architecture of CloudMoV. A surrogate (i.e., a virtual machine (VM) instance), or a VM surrogate equivalently, is created for each online mobile user in an IaaS cloud infrastructure. The surrogate acts as a proxy between the mobile device and the video sources, providing transcoding services as well as segmenting the streaming traffic for burst transmission to the user. Besides, they are also responsible for handling frequently exchanged social messages among their corresponding users in a timely and efficient manner, shielding mobile devices from unnecessary traffic and enabling battery efficient, spontaneous social interactions. The surrogates exchange social messages via a back-end PaaS cloud, which adds scalability and robustness to the system. There is a gateway server in CloudMoV that keeps track of participating users and their VM surrogates, which can be implemented by a standalone server or VMs in the IaaS cloud.

The design of CloudMoV can be divided into the following major functional modules.

1. Transcoder: It resides in each surrogate, and is responsible for dynamically deciding how to encode the video stream from the video source in the appropriate format, dimension, and bit rate. Before delivery to the user, the video stream is further encapsulated into a proper transport stream. In this implementation, each video is exported as MPEG-2 transport streams, which is the de facto standard nowadays to deliver digital video and audio streams over lossy medium.

2. Social Cloud: It is built on top of any general PaaS cloud services with BigTable-like data store to yield better economies of scale without being locked down to any specific proprietary platforms. Despite its implementation on Google App Engine (GAE) as a proof of concept, our prototype can be readily ported to other platforms. It stores all the social data in the system, including the online statuses of all users, records of the existing sessions, and messages (invitations and chat histories) in each session. The social data are categorized into different kinds and split into different entities (in analogy to tables and rows in traditional relational database, respectively). The social cloud is queried from time to time by the VM surrogates.

3. Messenger: It is the client side of the social cloud, resid-ing in each surrogate in the IaaS cloud. The Messenger periodically queries the social cloud for the social data on behalf of the mobile user and pre-processes the data into a light-weighted format (plain text files), at a much lower frequency. The plain text files (in XML formats) are asynchronously delivered from the surrogate to the user in a traffic-friendly manner, i.e., little traffic is incurred. In the reverse direction, the messenger disseminates this user's messages (invitations and chat messages) to other users via the data store of the social cloud.

4. Mobile Client: The mobile client is not required to install any specific client software in order to use CloudMoV, as long as it has an HTML5 compatible browser (e.g., Mobile Safari, Chrome, etc.) and supports the HTTP Live Streaming protocol. Both are widely supported on most state-of-the-art smartphones.

5. Gateway:The gateway provides authentication services for users to log in to the CloudMoV system, and stores users' credentials in a permanent table of a MySQL database it has installed. It also stores information of the pool of currently available VMs in the IaaS cloud in another in-memory table. After a user successfully logs in to the system, a VM surrogate will be assigned from the pool to the user. The in-memory table is used to guarantee small query latencies, since the VM pool is updated frequently as the gateway reserves and destroys VM instances according to the current workload. In addition, the gateway also stores each user's friend list in a plain text file (in XML formats), which is immediately uploaded to the surrogate after it is assigned to the user.

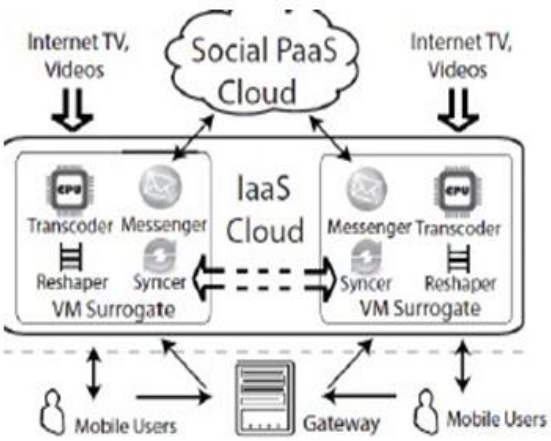

Fig.1: Architecture of CloudMoV

IV. CONCLUSION

We conclude results prove the superior performance CloudMo V, in terms of efficiency, timely social interaction, transcoding and scalability. In CloudMoV, a mobile users can fetch a live or on-demand video to watch from video gallery and can request his friends and family to watch the video and chat with their friends simultaneously while enjoying the video. In the current prototype we do not enable sharing of encoded streams among surrogates of different users. In future work such sharing can be enabled and carried out in a peer-to-peer fashion, e.g., the surrogate of a newly joined user may fetch the transcoded streams directly from other surrogates, if they are encoded in the format/bit rate that the new user wants

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