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Socio Intellectual Mobile TV using Cloud

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***Abstract*—Personal mobile devices provide much richer contents and social interactions to users. Problem with mobile devices are limited battery lifetime and unstable wireless connectivity, which degrades the quality of service experienced by mobile users. In this paper, Socio Intellectual Mobile-TV using Cloud (SIMTVCloud) is proposed. The system effectively utilizes both PaaS (Platform-as-a-Service) and IaaS (Infrastructure-as-a-Service) cloud services to offer the living-room experience of video watching to a group of disparate mobile users who can interact socially while sharing the video. As battery life is key performance bottleneck, we propose the use of burst transmission and carefully decide the burst size which reduces energy consumption and improves streaming quality. The video call is provided with chat features for socially interacting with each other.**

Keywords - Cloud computing, Multimedia streaming, Mobile computing, Mobile television and Transcoding.

Notation and Abbreviations

SIMTVCloud – Socio Intellectual Mobile TV using Cloud
PaaS - Plaform-as-a-Service
IaaS - Infrastructure-as-a-Service

1,INTRODUCTION

Now a days, mobiles are used for internet surfing, social networking, watching videos and lot more. We can watch YouTube videos, live cricket, serials or news on mobile device using internet. But there are some limitations of these small devices such as low battery power, unstable wireless connectiv We are designing a system which gives a best experience of watching videos with a group of users physically present at different locations. Suppose 2 or 3 friends wish to watch some movie together, they can watch the movie simultaneously. So by using our system they will share the video with each other and will chat simultaneously while watching video.

In this paper, we describe the design of a Socio Intellectual mobile TV using cloud , SIMTV Cloud, which can effectively utilize the cloud computing paradigm to offer a living-room experience of video watching to disparate mobile users with spontaneous social interactions. In SIMTV Cloud,, mobile users can import a live or on-demand video to watch from any video streaming site, invite their friends to watch the video concurrently, and chat with their friends while enjoying the video. It therefore blends viewing

experience and social awareness among friends on the go. Feature calls performed in heterogeneous portable systems are influenced by time-changing quality changes[8].As opposed to traditional TV watching, mobile social TV 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 TV enabled by set-top boxes over the traditional TV systems is already available , it remains a challenge to achieve mobile social TV, where the concurrently viewing experience with friends is enabled on mobile devices. There have been few studies on designing mobile cloud computing systems [1][2][3], but none of them deal in particular with stringent delay requirements for spontaneous social interactivity among mobile users.

2,LITERATURE SURVEY

Various portable TV frameworks have sprung up lately, determined by both fittings and programming advances in cell phones. Some early systems bring the living room experience to small screens on the move. Anyway they concentrate all the more on hindrance leeway so as to understand the union of the telecom company and the versatile system, than investigating the interest of "social" connections among portable clients.

Various portable TV frameworks have sprung up lately, determined by both fittings and programming advances in cell phones. Some early frameworks bring the lounge experience to little screens moving. In any case they concentrate all the more on obstruction leeway to understand the joining of the telecom company and the versatile system, than investigating the interest of "social" associations among portable clients.

The literature survey of this project is based on two main points:

1) Social Interaction between users.

2) Power Consumption by mobile device.

2.1 SOCIAL INTERACTION BETWEEN USERS

Today social interaction is the most important thing among the people who are working in the field of social networking. The social interaction can be provided with help of interactive TV experience among the users and by using instant messaging. Work has been done in this area by different professors, students and people who were worked on it.. Work done by N. Dutchneaut, R. J. Moore, E. Nikell in their examination paper Social TV: Designing for dispersed, social TV survey demonstrates that for diverse mobiles, diverse size presentations , fittings, different codecs social TV empowers set-top boxes are now accessible over the customary TV frameworks. Work done by Chuah their exploration paper reality texting: Injecting a measurement of reality into online talk develops the social encounters of survey conventional show projects to cell phones, however have yet to convey a decently incorporated structure. Contrasted with these former work and frameworks, we focus at a configuration for a nonexclusive, compact portable social TV structure, emphasizing co-survey encounters among companions over geological zones through cell phones. Compared to these prior work and systems, we target at a design for a generic, portable mobile social TV framework, featuring co-viewing experiences among friends over geographical areas through .

2.2 POWER CONSUMPTION BY MOBILE DEVICES.

Power consumption is more concerning while watching videos over the mobile devices. J. Flinnet and M. Satyanarayan states in their research paper Energy-aware adaptation for mobile applications those collaborations between the mobile OS and the mobile applications to balance the energy conservation and application performance. By conforming the CPU power for vitality sparing; notwithstanding, as indicated by the late estimation work of Carroll An investigation of force utilization in as advanced mobile phone the presentation and the remote system card (counting the cell module) and not the CPU expend more than a large portion of the general force utilization in advanced mobile phones these days. Our work has the capacity attain to a noteworthy (around 30%) force sparing, by exchanging the gadget between high-power and low-control transmission modes amid streaming.

3.PROPOSED SYTEM

We are describing the design of SIMTVCloud to seamlessly utilize agile resource support and rich functionalities offered by both an IaaS (Infrastructure-as-a-Service) cloud and a PaaS (Platform-as-a-Service) cloud. Our design achieves the following goals:

3.1 Encoding flexibility:

Distinctive cell phones have contrastingly measured presentations, altered playback fittings, what's more different codecs. Conventional arrangements would receive a couple of encoding organizations in front of the arrival of a feature program. SIMTVCloud modifies the streams for distinctive gadgets a. The blast transmission system settles on watchful choices on blast sizes and artful moves among high/low power utilization modes at the gadgets, keeping in mind the end goal to successfully increment the battery lifetime.

To begin with, effective synchronization systems are proposed to ensure that companions joining in a feature project may watch the same partition, and offer prompt responses and remarks. Second, proficient message correspondence systems are intended for social collaborations among companions. We embrace text based talk messages rather than voice in our current configuration, accepting that content talks are less distractive to viewers and simpler to peruse/compose and oversee by any client. We misuse a Paas cloud for social collaboration help because of its procurement of hearty hidden stages, with straightforward, programmed scaling of clients applications onto the cloud.

A model SIMTVCloud framework is actualized after the logic of Write Once,run Anyplace (WORA): both the front-end portable modules and the back end server modules are actualized in " 100 % Pure Java",with decently planned nonexclusive information models suitable for any bigtable-like information store.the just special case is the transcoding module, which is actualized utilizing ANSI C for execution reasons and uses no stage subordinate or restrictive Apis. To showcase its execution, we convey the framework on Amazon Ec2 and Google App Engine, and behavior careful tests on ios stages. Our model can be promptly moved to different cloud and versatile stages with little exertio continuous, by offloading the transcoding assignments to an Iaas cloud. Transcoder downloads the feature for the benefit of the client and transcodes it into the wanted organizations.

3.2 Battery efficiency:

A breakdown examination directed via Carroll shows that the system modules (both Wi-Fi and 3g) and the presentation help a critical parcel of the general force utilization in a cell phone. We focus at vitality sparing originating from the system module of advanced mobile phones through a productive information transmission system plan. The blast transmission system settles on watchful choices on blast sizes and artful moves among high/low power utilization modes at the gadgets, keeping in mind the end goal to successfully increment the battery lifetime.

3.3 Spontaneous social interactivity:

Various components are incorporated in the outline of SIMTVCloud to empower spontaneous social, co-review experience. To begin with, effective synchronization systems are proposed to ensure that companions joining in a feature project may watch the same partition, and offer prompt responses and remarks. Second, proficient message correspondence systems are intended for social collaborations among companions. We embrace text based talk messages rather than voice in our current configuration, accepting that content talks are less distractive to viewers and simpler to peruse/compose and oversee by any client. We misuse a Paas cloud for social collaboration help because of its procurement of hearty hidden stages, with straightforward, programmed scaling of clients applications onto the cloud.

3.4 Portability:

A model SIMTVCloud framework is actualized after the logic of Write Once,run Anyplace (WORA): both the front-end portable modules and the back end server modules are actualized in " 100 % Pure Java",with decently planned nonexclusive information models suitable for any bigtable-like information store.the just special case is the transcoding module, which is actualized utilizing ANSI C for execution reasons and uses no stage subordinate or restrictive Apis. The customer module can run on any cell phones supporting Html5, including Android telephones, ios frameworks, and so forth.

To showcase its execution, we convey the framework on Amazon Ec2 and Google App Engine, and behavior careful tests on ios stages. Our model can be promptly moved to different cloud and versatile stages with little exertion. While social TV enabled by set-top boxes over the traditional TV systems is already available , it remains a challenge to achieve mobile social TV, where the concurrently viewing experience with friends is enabled on mobile devices. There have been few studies on designing mobile cloud computing systems [1][2][3], but none of them deal in particular with stringent delay requirements for spontaneous social interactivity among mobile user.

Some early systems bring the living room experience to small screens on the move. Anyway they concentrate all the more on hindrance leeway so as to understand the union of the telecom company and the versatile system, than investigating the interest of "social" connections among portable clients. Work done by Chuah their exploration paper reality texting: Injecting a measurement of reality into online talk develops the social encounters of survey conventional show projects to cell phones, however have yet to convey a decently incorporated structure. Contrasted with these former work and frameworks, we focus at a configuration for a nonexclusive, compact portable social TV structure.

4, SYSTEM ARCHITECTURE

The system architecture which we are going to develop contains the following different modules :

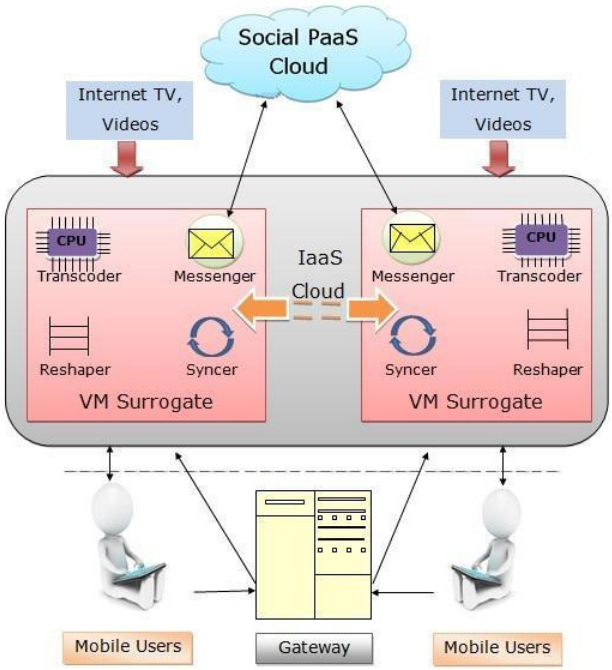

fig1: System Architecture

1.Transcoder
2.Social Cloud
3.Messenger
4.Gateway
5.Subscribe
6.Video Call

4.1 TRANSCODER

It lives in every surrogate, and is in charge of progressively choosing how to encode the feature stream from the feature source in the fitting arrangement, measurement, and bit rate. Before conveyance to the client, the feature stream is further typified into a fitting transport stream. Every feature is sent out as MPEG-2 vehicle streams, which is the true standard these days to convey advanced feature and sound streams over lossy medium.

4.2 Social Cloud

Informal organization is an element virtual association with innate trust connections between companions. This element virtual association can be made subsequent to these informal organizations reflect certifiable connections. It permits clients to communicate, structure associations and offer data with one another. This trust can be utilized as an establishment for data, equipment and administrations offering in a Social Cloud.

Notwithstanding, as indicated by the late estimation work of Carroll An investigation of force utilization in as advanced mobile phone the presentation and the remote system card (counting the cell module) and not the CPU expend more than a large portion of the general force utilization in advanced mobile phones these days. Our work has the capacity attain to a noteworthy (around 30%) force sparing, by exchanging the gadget between high-power and low-control transmission modes amid streaming.

4.3 Messenger

It is the customer side of the social cloud, living in every surrogate in the Iaas cloud. The Messenger occasionally questions the social cloud for the social information in the interest of the portable client and preprocesses the information into a light-weighted arrangement (plain content records), at a much lower recurrence. The plain content documents are non concurrently conveyed from the surrogate to the client in an activity amicable way, i.e., minimal movement is caused. In the opposite course, the courier disperses this current client's messages (welcomes and visit messages) to different clients by means of the information store of the social cloud.

4.4 Gateway

The door gives validation administrations to clients to log into the SIMTVCloud framework, and stores clients' accreditation in a perpetual table of a Mysql database it has introduced. It likewise stores data of the pool of right now accessible Vms in the Iaas cloud in an alternate in-memory table. After a client effectively logs into the framework, a VM surrogate will be allocated from the pool to the client. The in-memory table is utilized to ensure little question latencies, since the VM pool is upgraded much of the time as the entryway saves and crushes VM examples as per the current workload. Moreover, the door additionally stores each client's companion list in a plain content document (in XML groups), which is instantly transferred to the surrogate after it is relegated to the client.

4.5 Subscriber

In this module client can download the feature. Subscribe module download feature in rapid and clear feature streaming. Approved client each one download and watch the features.

4.6 Video Call

Feature calls performed in heterogeneous portable systems are influenced by time-changing quality changes. Bundle misfortune or transmission adjustment by system handover, bit rate exchanging, or codec changeover, are the potential consequences of client portability. Keeping in mind the end goal to enhance the quality under these circumstances, quality observing assumes a vital part to enhance client involvement in future portable systems.

5, TRANSCODING MECHANISM

It lives in every surrogate, and is in charge of progressively choosing how to encode the feature stream from the feature source in the fitting arrangement, measurement, and bit rate. Before conveyance to the client, the feature stream is further epitomized into a legitimate transport stream. The blast transmission system settles on watchful choices on blast sizes and artful moves among high/low power utilization modes at the gadgets, keeping in mind the end goal to successfully increment the battery lifetime. We embrace text based talk messages rather than voice in our current configuration, accepting that content talks are less distractive to viewers and simpler to peruse/compose and oversee by any client. We misuse a Paas cloud for social collaboration help because.

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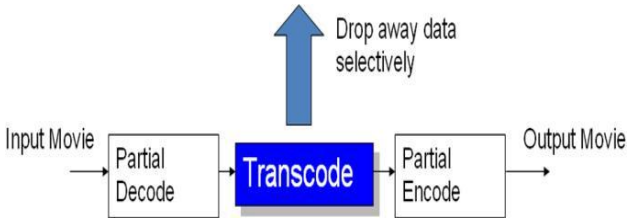

fig2: Transcoding mechanism

- Only one high quality compressed video is stored
- No/Much less computations on motion estimation
- Can produce comparable video quality with direct encoding

6, MATHEMATICAL MODEL

M=S,Q,M

- **S:** database stored on cloud that means different videos which are accessed by different clients and SQL database

- **Q:** Registration of all clients on the cloud which can makes friends to each other. Also Synchronization of video between two clients with their compatible mobile device video format along with massage passing that means chatting with friends from different locations.

- **M:** Let S is server stored on cloud which contains different videos and SQL database.

Consider C1,C2,.....Cn are the clients registered on cloud.

, M1,M2,.....,Mn are the messages which are passed between the clients., V1,V2,.....,Vn are the videos stored on cloud.

,L is number of clients recquired for synchronization and chatting between clients. ,if (n>=2 && n<m) then we can synchronise and chat with friends.

,F1,F2,.....,Fn is the formats of video

.

- i,j are moves from 0 to n
  - if Ci sends Mi message to Client Cj
  - i,j,L ⊆ n
  - if C having mobile device which supports video of format Fi and client Cj having mobile device which supports video of format Fj
- after synchronization Ci and Cj can chat and watch video at a same time form different locations.

VII. CONCLUSION

We will complete up exhibit the predominant execution of SIMTVCloud, the extent that transcoding benefit, helpful social collaboration, and versatility. In SIMTVCloud, flexible customers can import a live or on-investment gimmick to watch from any peculiarity streaming site, welcome their associates to watch the gimmick at the same time, and converse with their buddies while admiring the peculiarity. We finish up results demonstrate the unrivaled execution of SIMTVCloud, regarding transcoding productivity, convenient social connection, and adaptability. In SIMTVCloud, versatile clients can import a live or on-interest feature to watch from any feature streaming site, welcome their companions to watch the feature simultaneously, and talk with their companions while appreciating the feature.

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