CloudMOV: Cloud Based Mobile Social TV

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Abstract: **- The fast increasing power of personal mobiledevices (Smartphone,Tabletsetc) provides social interaction to users in early life. Recently many mobile entertaining or media application have been launched but most popular apps like Facebook,Twitter,Youtube have larger demand among users. But these media application are limited by the unstable wireless connectivity & limited battery lifetime of mobile devices due to this problem a quality of service encountered by the users. To avoid these problems Cloud Computing technology has been used. In this paper we discuss the design of Cloud based novel Mobile Social TV (CloudMOV) which utilizes both PaaS(Platform-as-a-Service) and IaaS(Infrastructure-as-a-Service) cloud services to offers the living room experience of video streaming site like Youtube etc and invite their friends or family for watch video simultaneously. They can also chatting and social interaction with each other while watching the video.**

***Keywords- Cloud MoV, Smart phone, IaaS, Paas,Adaptive video streaming, Cloud, Synchronization*.**

I. INTRODUCTION

Nowadays our Laptop, Notepad & Smartphones are distributed with many microprocessor cores & GB's of RAM's they have high computation power than broadband cellular infrastructure has further increase the use of smartphone by comman people. Every mobile device users need the fastest technology like 3G and WIFI for fast internet access and chatting these technologies focus more on realtime video stream & online game, social application. Many mobile media application like Facebook,Twitter have large demand among users but these media application are limited battery lifetime of mobile devices and unstable connection bandwidth.

Cloud computing provide low cost, scalable resource supply and power efficient mobile communication. CloudMOV effectively utilizes the cloud computing services to offer a living room experience of video watching. In CloudMOV the system effectively use of the cloud computing service like IaaS(Infrastructure-as-a-Service), Paas(Platform-as-a-Service) to provide good quality of video streaming. User can fetch on-demand or live video to watch and also can invite your family and friends for watching video. They can also chatting with each other and watching video simultaneously. The design achieves the following Goals.

1) *Encoding Flexibility:-*

There are various video streaming device which have differently size display and various screen resolution. They support for customized media playback hardward, video playback and also support for various codec CloudMOV unloads the transcoding streams of different devices at real time in Iaas Cloud. We employ VM(Virtual Machine) for each user in IaaS cloud.
The VM downloads the video and transcode it into the proper format while considering the particular configuration and current connectivity of the smartphone.

2) *Battery Efficient*:-

We analysis that the display and network modules both 3G or WIFI absorb large power in video streaming device to save energy coming from the network module of smartphone through and efficient data transfer mechanism design is the main goal we are focus on 3G, wireless networking as it is getting more widely use and challenging in our design than WIFI base transmission we investigate the key 3G configuration parameter such as power steps and the in activity timer & design a novel Burst transmission mechanism for streaming from the surrogate to the mobile devices.

3) *Spontaneous social interactivity:-*

Multiple mechanism are included in the design of CloudMOV for concurrent viewing and social chatting with each other first factor is efficient synchronization mechanism in which friends joining in video program may watch same portion and share their views and comment about video with each other.Next factor is an efficient message to communicate mechanism which is design for social interaction among friends. In CloudMOV PaaS cloud provide this mechanism through data storage of big table. PaaS Cloud can be used for social interaction and it is the foundation of cloud computing. IaaS provider maintain and deploy computer server,cloud network and storage.

4) *Portability:-*

A CloudMOV system implemented a following philosophy of "Write Once, Run Anywhere(WORA)" both the front end mobile module and back end server module are implemented in JAVA, Android, PHP and MySQL database is use for storing user data. A client module can run on any mobile devices supporting HTML5 browser, we employ the system on virtual

machine running on cloud and conduct through test on EC-2 micro instant.

II. RELATED WORK

A number of mobile TV systems have occurred in past years both software and hardware developed in mobile devices. Now a day bring the co-viewing experience to android phone's on the move these things focus more on convergence of the mobile network .

Microsoft is a central part ofMicrosoft 's cloud computing platform. It allows client to rent computer on which they can run their own computer application. It permit to scalable distribution of application by providing a web services to which a client can boot an Microsoft Machine Image to createing a virtual machine. Microsoft is a representative IaaS and PaaS cloud, offering raw hardware resources including networks to clients, CPU, storage and EC2 is an suitable platform for computing intensive tasks in mobile social TV *i.e.*, those the proxy carry out.

A Microsoft Machine Image (MMI) gives the information which is required to start an instance in the cloud which acts as a virtual server in the cloud.

Microsoft EC2 provides every instance with a consistent and predictable amount of CPU ability, regardless of its underlying hardware. Microsoft EC2 dedicates some resources of the host computer, such as instance storage capacity, memory and, CPU to a specific instance.MicrosoftEC2 utilizes other resources of the host system, such as the disk subsystem of instances and the network .If each virtual machine on a host system tries to use one of these shared resources as more as possible, each receives an equal amount of that resource.

Our framework is open to all Internet-based all video programs, live and on-demand, and supports a largescale of devices with HTML5 compatible browsers install, without any other compulsory component on the devices. In addition, we employ a proxy for each mobile user in the cloud rather than relying on a dedicated cluster, which can be most easy to implemented in practice. HTTP Live Streaming (HLS) is an HTTP-based media streaming and IOS software. It can also works by divide by overall stream into a number of small sequences of HTTP-based file downloads, each download loads one small piece of an overall potentially unbounded transport stream.

Finally, we are care of the lack of a richly-featured cloud based mobile social TV system in real life. Conversely, the prototype we implement is browser-based and platform independent, it also supports both live channels, Video On Demand(VoD) channels and even personal channels hosted by any user, with larger usage ranges and flexible extensibility.

III. ARCHITECTURE AND DESIGN

We describe the design of a novel mobile social TV system. CloudMoVcan essentially utilize the cloud computing services to offer a living-room experience of video watching to different mobile users with random social interactions. A cloud based mobile social TV system provides the two major functionalities for mobile users :

1. Universal Streaming :-
   A user can stream a live video from any video source or Internet video streaming site.
2. Co-viewing with Social Exchanges :-
   A user can invite multiple friends to watch same video, and chatting with each other while watching the video.

We design the architecture of the Cloud Based Mobile social TV(CloudMOV) and detailed designed of different module in the following :-

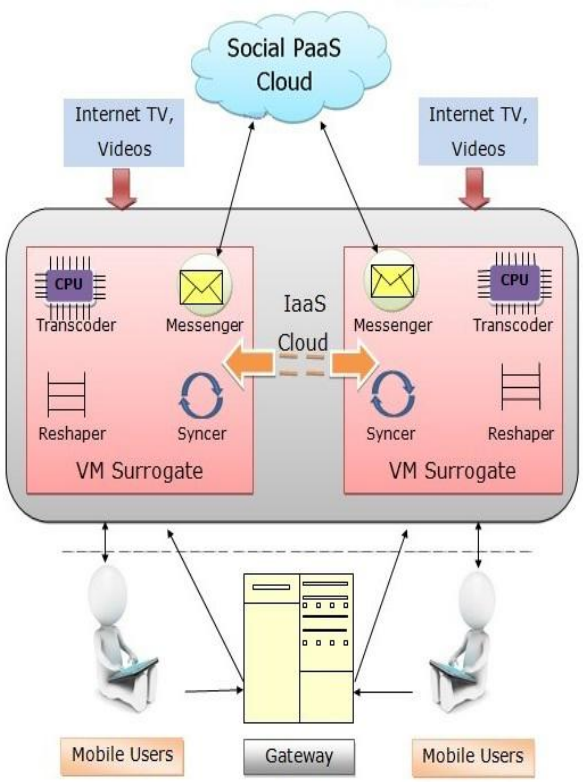

Fig: The architecture of cloud mobile social TV

The design of Cloud based Mobile social TV can be divided into following functional module

1. Transcoder :-

Transcoder is nested in each VM(Virtual Machine). It is dynamically encode& decode the video stream from the video source in the appropriate format, dimension, and bit rate for different devices. The video stream is encapsulated into a proper transport stream before delivering to the user. Each video is exported or converted into MPEG-2 transport

streams, which is the standard format use to deliver digital video and audio streams over lossy medium.

2. Reshaper :-

The Reshaper placed in each VM surrogate. It receives the encoded transport stream from the transcoder and divide it into small segments, and then sends each segment in a burst to the mobile device .

3. Social Cloud :-

It is devloped on top of any general PaaS cloud services with BigTable-like data store and online status. Social cloud stores all the social data in the system, including the online statuses of all users, records of the existing sessions, and messages in each session. The social data are divide into different kinds and split into different entities . The social cloud is queried from time to time by the VM surrogates.

4. Messenger :-

Messenger employ in each VM surrogate in IaaS cloud and it is the client side of the social cloud. It is the client side component of mobile user which can be used for chatting and interchange of messages between clients. The messenger transmits this clients messages (invitations and chat messages) to other users with the help of the data store of the social cloud.

5. Syncer :-

Each VM surrogate contain syncer. It is component of VM surrogate which can beused to retrieve user viewing status within certaintime limit.The syncer can give Co-viewing progress of this user is within a time window of other users in the same session (if the user chooses to synchronize with others).

6. Mobile Client :-

It is client side component. The Mobile client supports the HTTP Live streaming protocol to use CloudMoV, and it has an HTML5 compatible browser (e.g., Mobile Safari, Chrome, etc.).

7. Gateway :

It is used to authentication services for users to login are provided by the gateway to the CloudMoV system. It stores users data in a MySQL database. A VM surrogate will be authorize the user after he successfully login to the system.

IV. PROTOTYPE IMPLEMENTATION

We are designed a mobile social TV system, and deployed at Microsoft EC2 clouds , which is more largely used public (PaaS) platform as a service and (IaaS) infrastructure as a service cloud platforms.MicrosoftEC2 is a central part ofMicrosoft.com's allows user to rent an instance on cloud to run their application. Microsoft EC2 allows scalable divide the application by providing web services through which a can client an Microsoft Machine Image to creating and launching server instances as and when it is needed and pay as more as you utilize the service hence the name elastic.

The client first connect login page of Mobile TV with social interaction on cloud platform. After the client successfully automatically assigned VM proxy ,and welcomed by a portal page. When user login the gateway collects the device configuration information by client –agent and this information will sent to its VM for video encoding . When the user for video plaulist is first displayed and a video is selected from the playlist the user starts to play the video and user can receives the video . While watching video the user can check his friend status on the friend tab and send request to one or more friend to join him in viewing the live video . When user receives on friend tab and decides the join the session also even he can select to watching from the start or catch up with viewing progress.

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CONCLUSION

We introduced an application that giving a living room experience while watching a video. The fastly increasing power of personal mobile devices is providing much richer content and social interaction to user. In current prototype we do not enable sharing of encoded streams among surrogates of different user. In future work such sharing can be enabled and carried out in peer to peer fashion e.g. the surrogate of a newly joined user may fetch the transcoder streams directly from other surrogate if they are encoded in the format bit rate that the new user wants.

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