

Cloud-Based Novel Mobile Social TV (CloudmoV)

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Abstract: In this era of information and technology, two technologies became integral part of our lives, well at least for the younger or tech savvy generation, mobile phones and social media. Such is the power of these two, that business were forced to integrate these in their marketing and customer support strategies. Social media has become a place for today's customer to hangout, so it has also become a place for today's enterprises to advertise their products. From cosmetics to films everyone has a presence on the social network. In this paper, we propose the design of a Cloud-based, novel Mobile social TV system (CloudMoV). The system effectively utilizes both PaaS (Platform-as-a-Service) and IaaS (Infrastructure-as-a-Service) cloud services to offer These various designs for flexible transcoding capabilities, battery efficiency of mobile devices and spontaneous social interactivity together provide an ideal platform for mobile social TV services. These various designs for flexible transcoding capabilities, battery efficiency of mobile devices and spontaneous social interactivity together provide an ideal platform for mobile social TV services.

Key Terms: Cloud-based novel Mobile social TV, SMAC, Transcoding, Encoding flexibility.

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1. INTRODUCTION.

Now a day's laptops, Notepad and Smartphone's are shipped with many microprocessor cores and GB's of RAM's; they have high computation power than Normal desktop computers of late 90's. The wide deployment of 3G, 4G broadband cellular infrastructures has further increased the use of Smartphone by Common people. Every Smartphone users need the fastest technologies like 3G, Wi-Fi for fast web access & chatting. These technologies focus more on the challenging scenarios such as real-time video streaming and online gaming, for social interacting, and exchanging emails. Recently many mobile entertaining or media applications have been launched, but most popular app like Face book, Twitter, YouTube have larger demand among users. But these Media applications are limited by the unstable wireless connectivity and limited battery lifetime of mobile devices, due to these problems the quality of service encountered by the users of the Smartphone is not up to the mark. In order to overcome from these problems cloud computing technology has been used. Cloud computing provides low-cost, agile scalable resource supply and power

efficient communication between streaming devices. 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. It effectively utilizes the cloud computing standards to offer a co-viewing experience of video watching just as users are watching TV at their homes.

In Mobile social TV, the system effectively makes use of the cloud computing Services like Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) to provide good quality of video streaming, mobile users can fetch a on demand or live video to watch from video gallery and also you can invite your family and friends for watching the video.

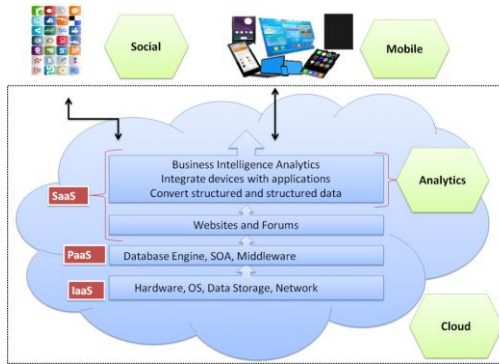


Fig 1. Typical SMAC Stack

They can also chat with each other while watching the video. In traditional system each users uses dish TV, set boxes for digital broadcasting of channels. The CloudMoV utilizes agile resource support and the functionalities which are Platform-as-a- Service (PaaS) and Infrastructure-as-a-Service cloud (IaaS) to achieve the following goals. Encoding Flexibility- There are various Video streaming devices which have large screen size and small screen displays, also they have various screen resolutions. The devices that support for customized media playback hardware, video playback and also support for various codec. Mobile social TV unloads the transcoding streams of different devices at real time in an IaaS cloud. A VM (virtual machine) is employed for a user in the IaaS cloud. The VM downloads the video and transcodes it into the proper formats while considering particular configurations and current connectivity quality of the Smartphone. Spontaneous Social Interactivity-Multiple mechanisms are included in the design of Mobile social TV for concurrent viewing and social chatting with each other. First factor is efficient synchronization mechanisms in which the same portion of the video program can be able to watch by friends in the same circle and share their views and comments about video with each other. Second factor is an efficient message communication mechanism which is designed for social interactions among friends. PaaS cloud can be used for social interaction support due to its provision of powerful

2. SYSTEM FUNCTION OF CLOUD MOV:

Existing System:

A number of mobile TV systems have sprung up in recent years, driven by both hardware and software advances in mobile devices. Some early systems bring the living room experience to small screens on the move. But they focus more on barrier clearance in order to realize the convergence of the television

network and the mobile network, than exploring the demand of “social” interactions among mobile users.

Disadvantages of Existing System:

Although many mobile social or media applications have emerged, truly killer ones gaining mass acceptance are still impeded by the limitations of the current mobile and wireless technologies, among which battery lifetime and unstable connection bandwidth are the most difficult ones.

Proposed System:

We propose the design of a Cloud-based, novel Mobile social TV system. 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. To guarantee good streaming quality as experienced by the mobile users with time varying wireless connectivity, we employ a surrogate for each user in the IaaS cloud for video downloading and social exchanges on behalf of the user.

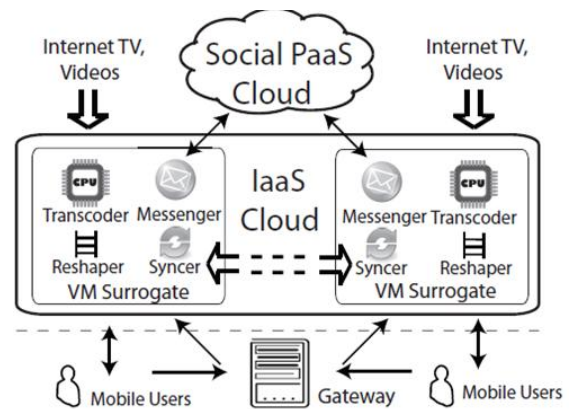


Fig 2. System Architecture of Cloud MoV

Advantages of Proposed System:

- **Encoding flexibility:** Different mobile devices have differently sized displays, customized playback hardware’s, and various codec’s. Traditional solutions would adopt a few encoding formats ahead of the release of a video program. But even the most generous content providers would not be able to attend to all possible mobile platforms, if not only to the current hottest models. CloudMoV customizes the streams for different devices at real time, by offloading the transcoding tasks to an IaaS cloud.

- **Battery efficiency:** The burst transmission mechanism makes careful decisions on burst sizes and opportunistic transitions among high/low power consumption modes at the devices, in order to effectively increase the battery lifetime.
- **Spontaneous social interactivity:** Multiple mechanisms are included in the design of CloudMoV to enable spontaneous social, co-viewing experience.
- **Portability:** A prototype CloudMov system is implemented following the philosophy of “Write Once, Run Anywhere” (WORA): both the front-end mobile modules and the backend server modules are platforms implemented in “100% Pure Java” Our prototype can be readily migrated to various cloud and mobile with little effort.

3. SYSTEM DESCRIPTION

1. Tran coder
2. Social Cloud
3. Messenger
4. Gateway
5. Subscribe

Tran coder

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. 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

Transcoding mechanism

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. 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.

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

Social Cloud

Social network is a dynamic virtual organization with inherent trust relationships between friends. This dynamic virtual organization can be created since these social networks reflect real world relationships. It allows users to interact, form connections and share information with one another. This trust can be used as a foundation for information, hardware and services sharing in a Social Cloud.

Customers today do not spend money out of brand loyalty their forefathers once showed. Instead it now depends on information, reviews and, at times, practical demonstration where possible. This forced businesses to make analytics a part of their marketing strategy. A quick statistical analysis of performance, cost and comparison to rival product is helping the consumer make a quick and informed decision. High and global availability of information and its compatibility with various devices became cost effective with cloud technology. While each of these four are capable for enhancing the business on its own, integrating these four together as a stack has changed the way businesses are looking to maximize their customer base, enhance brand value and off course, profit. Social Mobile Analytics and Cloud – **SMAC**, the new four-letter word is now on every entrepreneur’s lips, IT companies included!

So where is this useful? Almost in every walk of our digital life! Take for example, a bank. Social media can help banks engage their customers in a frank conversation and gain insights into their spending habits, likes and dislikes etc. and to provide a personalized solution to help his banking needs thus boosting his loyalty and gaining in reputation. This a far cry from the one-shoe-fits-all policies the banks applied just over a decade ago.

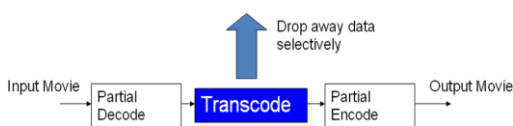


Fig 3. Implementation of Transcode

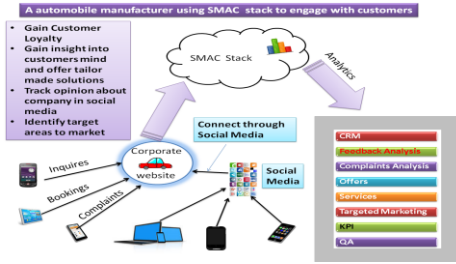


Fig 4. SMAC stack to engage with customers

Messenger

It is the client side of the social cloud, residing 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 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.

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.

Subscribe

In this module user can download the video. Subscribe module download video in high speed and clear video streaming. Authorized user every one download and watch the videos.

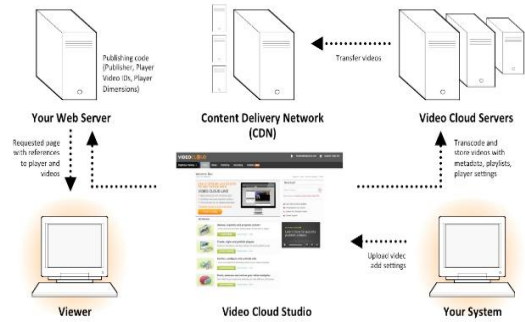


Fig 5. The Video Cloud Perform Architecture.

4. CONCLUSION

We conclude results prove the superior performance of CloudMoV, in terms of transcoding efficiency, timely social interaction, and scalability. In CloudMoV, 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.

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