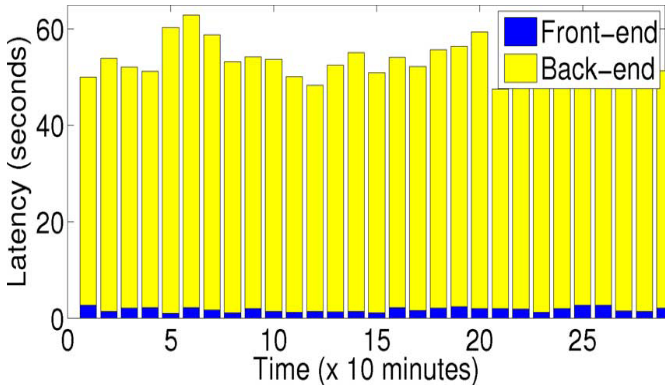

Figure 9: Average user sign-in latencies over time

Conducted tests by creating a live transmit stream from the same flash video and deploy it on Mobile CloudMoV. We discover that despite of the burst communication intervals we set, the device's power level does not drop due to repeated play list update in a live streaming. We omit the plots of the results since they are similar to the red curve in Fig. 8. Different browsers may configure different update frequencies, since the value is not specified in the HTTP Live Streaming protocol. This value should be suspiciously set, for potentially increasing battery lifetime at the mobile users.

6.3 Startup Latency of Video Playback

We estimate the transcoding performance on the surrogates in Mobile CloudMoV, first by calculating the playback startup latency on the surrogates, at the time of video subscription request is obtained from the mobile user to the time when the first transcoded burst segment is generated. We deploy the VM surrogates (ami-b6f220df) on three types of instances generated by Amazon EC2, with the complete configurations shown in Table I. For fair relationship, all the instances are deployed in the zone "east-1-c", and then transcode the same flash video used in experiments of Section V-B. Fig. 10 shows the playback startup latencies when dissimilar VM instances are used as the surrogate for an iPhone 4S, and dissimilar burst communication intervals are employed.

Configuration of VM Instances

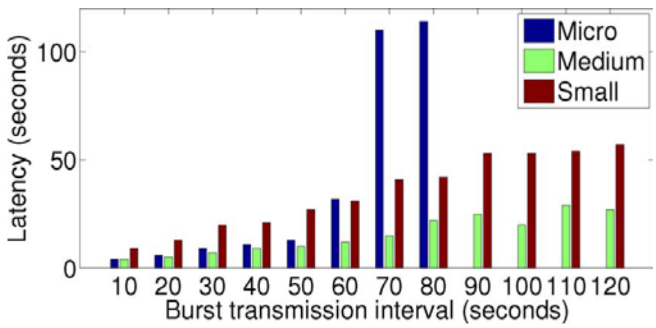

Figure 10: Startup latency at different burst sizes.

In our experiments, we experienced the network connection bandwidth flanked by the Amazon EC2 instance and the YouTube, and observed that video downloading from YouTube to the instances is very speedy. Therefore, the establish latency depends mainly on the burst period setting and the transcoding rapidity at the VM surrogate. Fig. 10 shows that the longer the burst period is, the bigger the segment of video to transcode is, and therefore the longer the startup latency is. We can see the intermediate instance achieves better transcoding concert with larger calculation ability, as compared to the small instance. We consider that it is caused by the expenses of load balancing among its two cores. This shows that the performance can be enhanced by a more proficient transcoding algorithm targeting at multi-core platforms, that will be part of our future work.

7. Conclusion

This paper presents our view of what might become a trend for mobile Social TV, i.e., mobile social TV based on sprightly resource supports and prosperous functionalities of cloud computing services. We launch a standard and convenient mobile social TV skeleton, Mobile CloudMoV, that makes utilize of both an IaaS cloud and a PaaS cloud. The paradigm provides efficient transcoding services for most platforms beneath various network situation and supports for co-viewing experiences through appropriate chat interactions amongst the screening users. By enrolling one surrogate VM for each mobile user, we attain decisive scalability of the scheme. Through an in-depth examination of the power states in business 3G cellular networks, we then recommend an energy-efficient burst communication mechanism that can successfully increase the battery lifetime of user devices. We have impended a practical prototype of Mobile CloudMoV, deployed on Google App Engine and Amazon EC2, where EC2 instances serve as the mobile users' surrogates and GAE as the public cloud to handle the huge volumes of public message interactions. We conducted carefully planned experiments on iPhone 4S platforms. The investigational results confirm the higher performance of Mobile CloudMoV, in terms of transcoding effectiveness, power saving, appropriate social interaction and extensibility.

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