Video Streaming for QOS Approach in Multimedia Cloud

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Abstract--Mobile devices become broadly accepted computing paradigms but the mobile services need to be aware of the dynamical user environment and adapt correspondingly to the context. With the increasing amount of multimedia can add value to the new semantic multimedia services, by seeing the contextual information. Our goal is to provide new concepts for mobile multimedia computing in network and device-aware Quality of Service (QoS) approach that provides multimedia data suitable for a extreme unit environment via interactive mobile streaming services, further considering the overall network environment and fixing the interactive transmission frequency and the dynamic multimedia trans-coding, to avoid the waste of bandwidth and terminal power. Ultimately, this project realized a prototype of this architecture to validate the feasibility of the proposed method. Cloud provides efficient self-adaptive multimedia streaming services for varying frequency range environments.

Keywords: Adaptive Qos, Cloud multimedia, Network device-aware.

I. INTRODUCTION

Cloud computing is a technology that uses the internet and pivotal remote servers to preserve data and applications. Cloud computing allows enjoyer and businesses to use applications deprived of installation and access their personal files at any computer with internet access. This technology grants for much more energetic computing by centralizing storage, memory, processing and bandwidth.

Cloud computing is a wide-ranging solution that delivers IT as a service. The flexibility of cloud computing is a function of the allocation of assets on demand. Before cloud computing, websites and server-based applications were executed on a specific system. Cloud computing is broken down into three segments application, storage and connectivity.

CLOUD COMPUTING MODELS

Software as a Service

Cloud Applications or Software as a Service (SaaS) refers to software delivered over a browser. SaaS eradicates the need to install and run applications on the customer's own computers/servers and reduce maintenance, upgrades and support. Examples of SaaS are Facebook, SalesForce, etc.

Platform as a Service

Cloud platform services or Platform as a Service (PaaS) refers to an environment for software development, storage and hosting conveyed as-a-service over the Internet. Examples of PaaS are Google App Engine, Force.com, Microsoft Azure, WOLF, etc.

Infrastructure as a Service

Cloud infrastructure services or Infrastructure as a Service (IaaS) expresses a computing framework, typically a virtualization environment, as-a-service. Examples of IaaS are virtual servers subleased by Amazon, Rackspace, GoGrid, etc.

DEPLOYMENT MODEL

Each company chooses a deployment model for a cloud computing solution placed on their specific business, operational, and technical requirements. Four primary cloud deployment models are private cloud, community cloud, public cloud, and hybrid cloud.

Public Cloud

Public cloud refers to Cloud Computing in the traditional mainstream sense, by which resources are dynamically provisioned on a fine-grained, self-service basis over the Internet. These assets are provisioned via web applications/web services, from an off-site third-party provider who stakes resources and bills the customer on a fine-grained utility computing basis.

Community Cloud

A community cloud is settled among several organizations that have similar requirements and seek to share their computing infrastructure in order to recognize some of the benefits of the Public Cloud. With the costs spread over fewer users than a Public Cloud (but more than a single tenant) that option is more expensive but may offer a higher level of privacy, security and/or policy compliance.

Private Cloud

A term that is similar to, and derived from, the concept of Virtual Private Network (VPN), is utilized to Cloud Computing. The Private Cloud delivers the benefits of Cloud Computing with the option to upgrade on data security, corporate governance and reliability.

Hybrid cloud

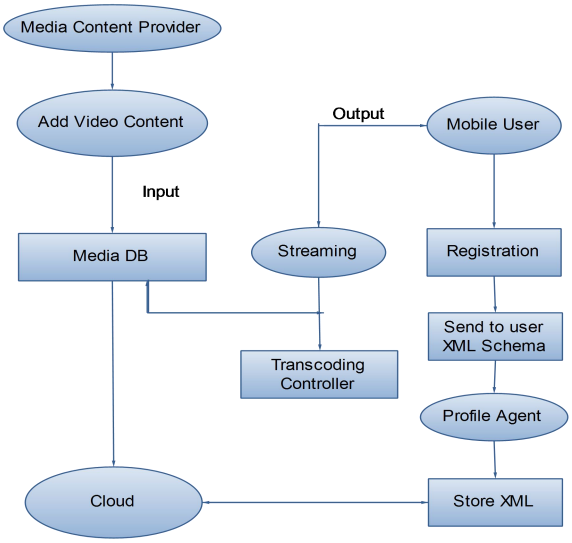
The cloud infrastructure is shared by several organizations with trivial concerns (e.g., mission, security requirements, policy, and compliance review). For example, the Google GovCloud provides the Los Angeles City Council with a segregated data environment to store its applications and data that are usable only to the city's agencies.

II. PROPOSED SYSTEM

The featuresof streaming protocols to file the current stream video content and the bandwidth state of the user while also analyzing the past bandwidth changes to evaluate and predict the possible frequency data changes in the future although using map and reduce algorithm in cloud computing to rapidly transfer the video encoding to quick transfer the most suitable video format for the user. It performed well, both in power consumption and streaming quality. Different from mobile streaming, this work offers cloud-based real time trans-coding for adaptive mobile streaming. Based on cloud computing this researches offers a more economical method that uses map-reduce to separate the video content into different clips.

Performs distributed encoding to solve the immediate multimedia trans-coding problem and further propose a dynamic communicative and predictive high frequency for dynamic mobile environments.This can provide a more balanced streaming service for tricky network. Compared to a stable network, the losses of bandwidth and power in the terminal units caused by enormous packet transmission can be reduced.The streaming mechanism and to consider incasethe overall electric expenditure of the device could provide a complete multimedia file playback service.

A better dynamic adjustment mechanism and to avoid the precaution of a fixed quality which would reduce the image quality.The utility of the proposed method was validated and the relevant experiment was analyzed by constructing the prototype environment.The SVC Trans-coding Controller (STC) hands over the trans-coding work via map-reduce to the cloud, in order to increase the trans-coding rate.



A. PROFILE MODULE

The profile agent is used to obtain the mobile hardware environment parameters and create a user profile. The mobile device transmits its hardware terms in XML-schema format to the profile agent in the cloud server. The XML-schema is metadata, which is mainly semantic and sub stain in describing the data format of the file. The metadata enables non-owner users to see data about the files, and its structure is extensible. However, any mobile device that is using this cloud service for the first time will be inadequate to provide such a profile. Through this function, the mobile device can introduce an XML-schema profile and transmit it to the profile agent. The profile agent determines the required purview for the XML-schema and creates a user profile, and then transmits the profile to the DAMM for identification.

B.MEDIA CONTENT PROVIDE

The service earner has direct centralized management of the contract politics among all types of customers. It also takes controller over the streaming and stored content on the server with possibility to contract external server for single or short term streaming. This may emerge as a result of increased petitions for live or on demand streaming content. Such a cooperation with the service earner acting as a mediator among third party servers and own clients, provides the business as more streaming contents become available. The owner of an external streaming server profits from the cooperation with the cloud service earner and indirectly disposes with the same user friendly interface which captivate a number of new clients. Also it uses a reliable service that relies on a scalable cloud computing platform of firing higher frequency range, lower latency, better load balancing, scalability and robustness.

C. DYNAMIC NETWORK ESTIMATION (DNEM)

The DNEM is mainly based on the measurement-based expectation concept; however, it supplementary develops the Exponentially Weighted Moving Average (EWMA). The EWMA uses the tasks of the historical data and the current observed value to calculate gentle and flexible network frequency range data for the dynamic adjustment of weights.

D. TRANS-CODING CONTROLLER

They proposed Device and Network-Aware Scaling (DeNAS) for multiple mobile devices, determining the appropriate SVC layer number accede to the device capability, the network capacity and the user's request, so as to meet the video peculiarity requirement of the device and to increase the efficiency of the network bandwidth service. The results exhibited that even in multiple shared environments with limited bandwidth; the framework can provide SVC streaming with excellent image quality. Proposed Adaptive Spatial Resolution Control (ASRC) algorithm is used to reduce the power consumption of mobile devices. This algorithm recognizes picture quality, available bandwidth and energy consumption. The energy for decoding is computed before the video data is transmitted, and the energy consumption

and picture quality are estimated before the SVC layer number to be downloaded is determined.

E. STREAMING DISTRIBUTE

This module to appropriate the video based on user profile and our network bandwidth, this module achieve for better QOS video streaming over cloud computing. Wireless multimedia streaming was carried out at a fixed bandwidth. It was observed that in the case of stream limiting caused by a fixed bandwidth, the mechanism proposed in this study used the network mean value as the intermediate unit of the video quality. This had a better effect in comparison.

Encoding Time with Multi-computing for SVC Trans-coding. Video Quality in Static Network, Bit rates in Static Network and other two fixed quality coding, but the overall improvement effect was not obvious. For a dynamic network, this study used bandwidth-recording software to record at intervals of 3 seconds. The user was allowed to be in three situations: walking, driving, and taking train. Each situation was recorded for 10 minutes as a dynamic network.

III. REQUIREMENTS

Software used: C# is used as a platform for coding along with Visual Studio 2010 which is running on Intel i5 processor, along with 2 GB RAM for implementation.

IV. RESULTS

The new design of a mobile streaming, create 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 dissimilar mobile users who can interact socially while sharing the video. Guarantee good streaming quality as experienced by the mobile users.

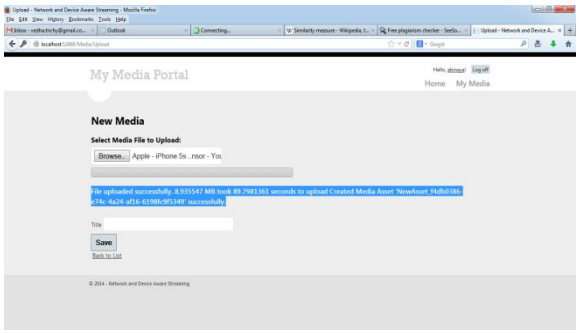


Fig 1 Video File Uploaded Size and Uploaded Time

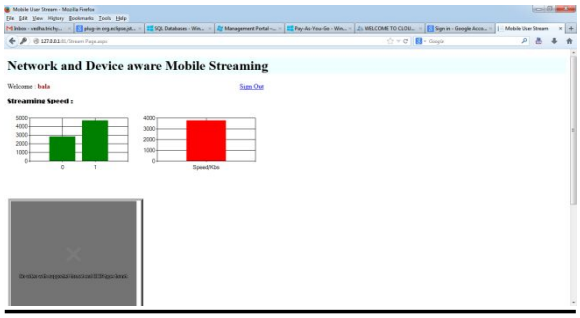


Fig 2 Mobile Streaming Page

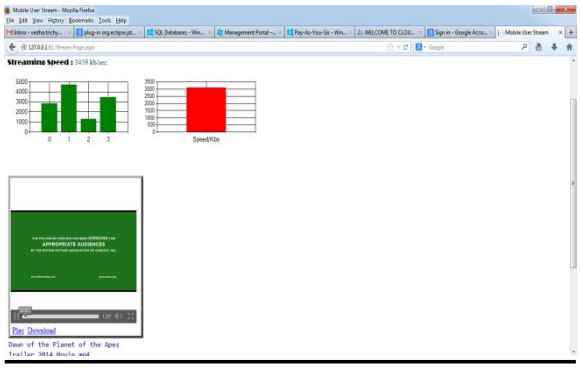


Fig 3 Video Streaming Page

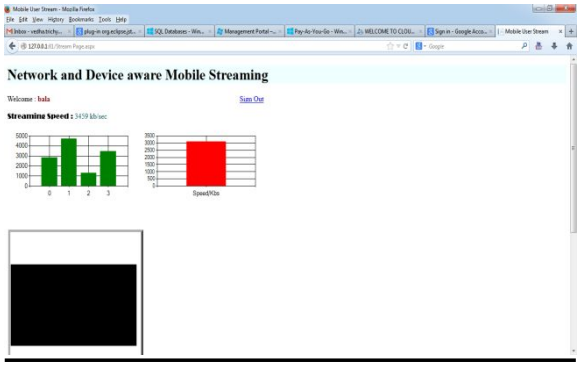


Fig 4 Network Prediction

Fig 5 Download Video

V. CONCLUSION

Mobile multimedia streaming services, how to provide appropriate multimedia files conferring to the network and hardware devices is an interesting subject. A set of adaptive networks and a device aware QoS approach for interactive mobile streaming was proposed. The DNEM and DBPM were used for the prediction of network and hardware features, and the communication frequency and SVC multimedia streaming files most suitable for the device environment were determined according to these two modules. In the experiment, the overall prototype architecture was accomplished and an experimental analysis was carried out. The experimental data proved that the method could maintain a certain level of multimedia service quality for dynamic network environments and ensure smooth and complete multimedia streaming services. Cloud services may accelerate research on SVC coding in the future.

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