iCloudMedia: A Business Model for Cloud-Based Interactive Multimedia Services*

Phooi Yee Lau, Sungkwon Park, Joohan Lee, Joonhee Yoon, and Eunjo Lee

Media Communications Laboratory, Hanyang University, 133-791 Seoul, Republic of Korea
{laupy,sp2996,hitch100,jjdad,leeej}@hanyang.ac.kr

Abstract. The Pay-TV markets are undergoing rapid change. As companies increasingly look for resources efficiencies, cloud computing is seen making waves in the Pay-TV markets. This hugely popular technology will revolutionized how multimedia content is being delivered. Why? We are in dire needs to integrate web, social, mobile and on-demand TV together as interactive content, and deliver them to any television set as a single service. We have seen some companies offering these services and have been rather successful. What they still lack is to provide some form of flexibility in resource(s) provision and content management, especially to subscriber(s). Currently, the resources are allocated based on availabilities and service agreements, while content is managed using on-the-top program guide tightly controlled by the service operator. This paper introduces a new framework, named iCloudMedia. The iCloudMedia describes a cloud-based framework that allows “push” on-the-fly changes and “pulls” rich personalized multimedia content simultaneously in an interactive resource(s) market. We strongly believe that innovative content branding and configurable resource management through easy-to-manage and flexible user interface is the next logical step for service operators.

Keywords: cloud computing, multimedia content, self-configurable resource management, system architecture.

1 Introduction

Digital content industry is the new driving force for the development of information industry and this has led to the growing importance of research in this area. Some trends shows that the current content distribution networks (CDN) are in a dire need for some sort of improvements and new frameworks need to be designed in order to sustain the viability of interactive multimedia services in a broadband context, in terms of scalability and QoS.

* This work was supported in part by the Brain Korea 21 (BK21) project from the Korean Ministry of Education, the Korean Institute of Science and Technology Information (KISTI) Contract No. N10007 (Research of Video-on Demand Technology for Cable Broadcasting Operator with Cloud Computing) and the Seoul R&BD Program (No. PA090720).
Cloud computing, the latest buzzwords in the technology sector, describes a new technology where services, infrastructures and platforms can be delivered over the high-speed network anywhere, anytime and on any device [1-3]. As companies increasingly look for resources efficiencies, this hugely popular technology has revolutionized how multimedia content is being delivered and consumed. Many cable and IPTV operators leap aboard the cloud computing bandwagon from a green computing angle. Why? IPTV operators find it hard to compress HD content below 6 Mb/s, and 3DTV and HDTV cannot run on 12 Mb/s over a standard DSL line. Cable operators, though able to run true HD in a single stream or 3DTV in multiple streams, have to fight against rival IPTV operators to deliver high quality multimedia content as technologies matured.

Historically, these operators has been drive testing vast areas, spending huge effort and money trying to determine which technology would fit what services. However, recently, operators began to focus on how to make more revenues through adding new services, introducing personalization and applying green tech initiatives.

2 Overview

This paper discusses how interactive multimedia content can be delivered in a more efficient and cost effective ways using associated cloud computing technologies such as those presented in [4-7]. We present a new interactive middleware for providing interactive multimedia services on the cloud, to enable subscribers receive and share web TV, social TV, mobile TV and VoD streams from wherever, whenever and however. The iCloudMedia framework is a new framework that delivers and sends “push” on-the-fly changes and “pulls” rich metadata content by both, the operators and the subscribers, through resources availability using an interactive menu in an open market. We strongly believe that innovative content branding and configurable resource management is the next logical step for operators to increase their revenues and for subscriber to obtain optimal viewing experience.

3 iCloudMedia

Fig. 1 shows the proposed system architecture of a cloud-based interactive multimedia service. Multimedia content, streamed from any of the virtual media servers, are being delivered according to subscribers’ requests based-on resources availability, through iCloudMedia.

iCloudMedia business model is shown in Fig. 2. A subscriber(s) is able to change his/her reservation and selects any available resource(s) offered in the market through a reservation system which manages incoming service request.

The services available are listed as follows:

- view available resources
- add/remove resources
- move resources to other locations