Advanced Science and Technology Letters
Vol.60 (Mobile and Wireless 2014), pp.49-52
http://dx.doi.org/10.14257/astl.2014.60.13

Design of a Database System for Content Registration System

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Abstract. It is well known that the popularity of IPTV is rapidly growing. One of the essential components of IPTV systems is content registration system (CRS) and one of the most important parts of a CRS is the database system of it. We introduce our design of the database system for our CRS.

Keywords: Content Registration System, Database, IPTV.

1 Introduction

IPTV stands for Internet Protocol Television. This implies that users who have any IP device can watch television wherever they are [1]. Based on the definition of IPTV, we can conclude that the smart TV is also a kind of IPTV. If someone coins a new term such as 'intelligent TV' or 'active TV' to indicate an innovatively improved version of smart TV it will also be a kind of IPTV as long as it is for multimedia service delivered over IP based networks [2].
One of the essential components of IPTV system is content registration system (CRS). For example, the authors of [3] introduced an ontological knowledge based semantic multimedia contents retrieval framework for Smart TV. Since IPTV systems broadcast new programs every day, a content registration system of an IPTV handles a huge volume of content stored in a database. Therefore, this paper introduces our design of a database system for content registration system (CRS).

2 Related Works

A design of a content registration system (CRS) was introduced in [4]. The CRS allows a content provider to register his/her content via the web portal, authoring tool, and application programming interfaces (API). There are three ways of registering content: directly, through the editor, and through the APIs. A content usually consists of multiple essence files (video files, audio files, caption files, and image files) and it repeats up-loading one by one.

Integrating broadband technology with broadcasting, the Japan Broadcasting Corporation (NHK) is developing a hybrid system called Hybridcast. Hybridcast

ISSN: 2287-1233 ASTL

provides television programs with rich and varied applications to the users. In 2008, NHK launched a broadband-based video-on-demand (VOD) service for digital TV receivers and PCs [5]. On the Internet, most of the users of smart phones, tablet terminals, and Web-based TVs use social media such as blogs and social networking services (SNSs) [5].

There are many broadcast-broadband hybrid systems. For example, YouView [6] is under development by the British Broadcasting Corpoeation (BBC) and HbbTV [7] has launched its services in Germany, France, and other countries [5].

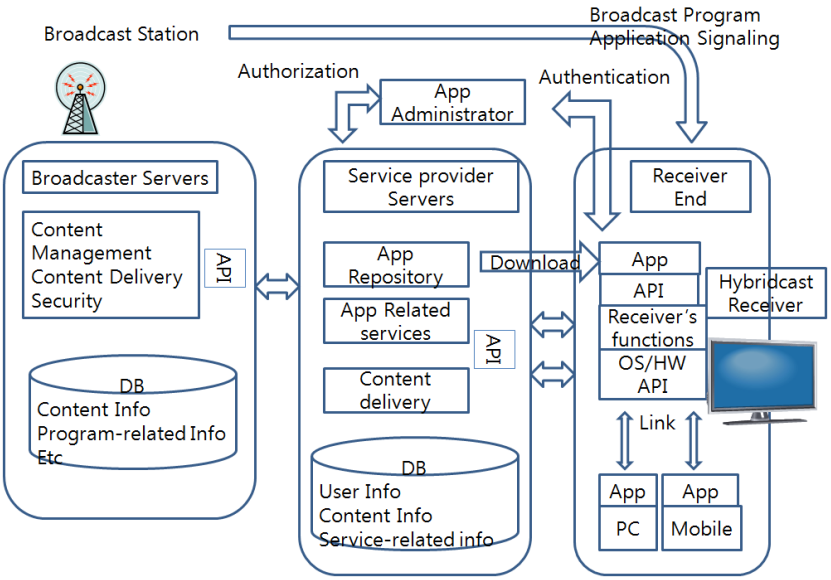

Fig. 1. The architecture of Hybridcast system

Hybridcast system consists of three blocks: broadcaster servers, service provider servers, and receivers as shown in Fig. 1. The broadcaster servers broadcast content and content-related information to the service provider servers. The service provider servers provide applications, content, and relevant information to the receivers or end users. Hybridcast receivers execute applications to realize various services [5].

3 Design of the Database System

We need tables to store common codes and group codes in our database as shown in Fig. 2. The attributes of COMMONCODE include CODE, CODEGROUP to which this CODE belongs, CODENAME, CODENAME_ENG, DISPLAYORDER, DESCRIPTION, EXTRAFIELD1, REGUSERID, REGDATE, UPDATEUSERID, UPDATEDATE, and FLAG to specify whether this record is disabled or not. The attributes of COMMONCODEGROUP include CODEGROUPCODE, FLAG, and IFFLAG to specify whether accessing this record is allowed or not.

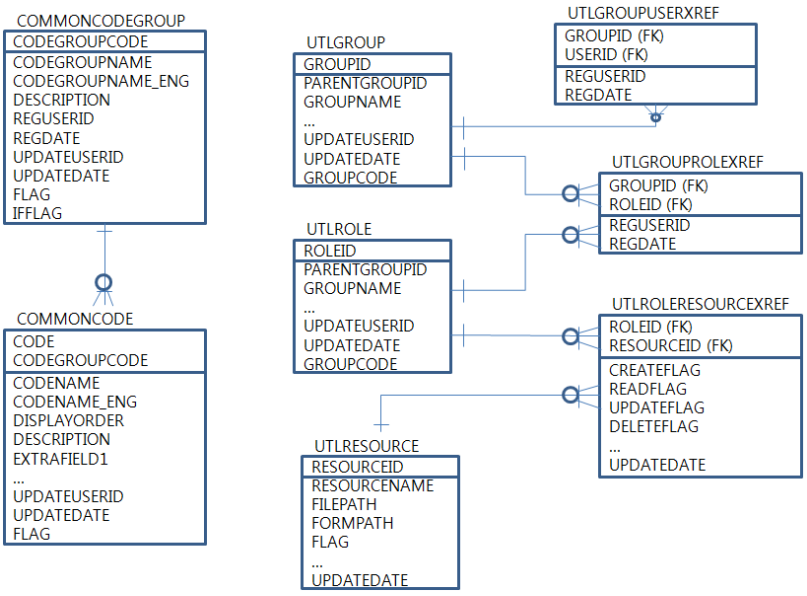

Fig. 2. The tables to record information of codes and the relationship between users, roles, and resources

Users of our CRS are categorized into groups and each group performs a unique set of roles. Each role is associated with a set of resources that are allowed to be accessed by the role. Relationship between user groups, roles and resources is stored in the tables shown in Fig. 2. The attributes of UTLGROUP include GROUPID, PARENTGROUPID, GROUPNAME, DESCRIPTION, ADMINMEMO, DISPLAYORDER, FLAG, PARENTFLAG to specify whether the parent group is activated or not, REGUSERID, REGDATE, UPDATEUSERID, UPDATEDATE, and GROUPCODE. The attributes of UTLGROUPROLEXREF include GROUPID and ROLEID, and a record of this table represents that the group matched to GROUPID performs the role matched to ROLEID. Similarly, the attributes of UTLGROUPUSERXREF include GROUPID and USERID, and a record of UTLGROUPUSERXREF represents that the user matched to USERID belongs to the user group matched to GROUPID. Further, the attributes of UTLROLERESOURCEXREF includes ROLEID and RESOURCEID, and a record of this table represents that the role matched to ROLEID is allowed to access the resource matched to REOURCEID.

Our CRS supports bulletin boards. We have BOARD table to record messages to be posted on a bulletin board, BOARDATTACHMENT to record information of the files attached to the bulletin messages, and BOARDATTACHMENTDOWNLOG to record history of downloading attached files.

4 Conclusions

One of the most important critical success factors of IPTV systems is the popularity of content that the system broadcasts. An IPTV system gathers content through its content registration system. Therefore, we are developing a content registration system for IPTV systems. This paper introduced our design of the database system for the content registration system.

Acknowledgments. This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education (NRF-2011-0006942) and by 'Development of Global Culture and Tourism IPTV Broadcasting Station' Project through the Industrial Infrastructure Program for Fundamental Technologies funded by the Ministry of Knowledge Economy (10037393).

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