

UPnP AV framework for Real-time AV Streaming

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ABSTRACT

In this paper we address research issues in providing real-time multimedia services, which enable users to take audio/video contents from the various media servers and play on their applications. We describe UPnP AV framework that supports real-time streaming between a media server and the application. The media server streams to application using RTP/RTSP, which is more suitable than HTTP-Get method.

Keywords : Universal plug and play (UPnP), Real-time Transport Protocol (RTP), Real-time Streaming Protocol (RTSP), AV contents

1. Introduction

While the users of Home Network are increasing, user rate is not growing because of the lack of knowledge of users, the difficulty of system operating and the lack of standardization of services[1]. Also, due to increase in number of users of digital electric home appliance and PC, the use of multimedia contents based on these means has become generalized, although its use is limited to PC domain. The future Home Network service, we mean a service that enables users to take multimedia services wherever they are in the home. So we need AV framework that allows AV contents to play.

Universal Plug and Play (UPnP) forum defines UPnP AV framework for sharing the AV contents and controlling the media players[2]. We implemented the UPnP AV framework, which corresponds with the definition[3]. Our framework

includes Media Server, Media Renderer and Control Point and offers user-friendly GUI for public users.

The rate of AV contents in the Home Network is increasing and the users want to have real-time services, especially in video contents. Our research led us to implement the expansion framework, which allows UPnP AV framework to service the real-time streaming service using the real-time transfer protocol like as RTP/RTSP.

This paper is organized as follows. In the next section we review RTP/RTSP that is the technology of the real-time transfer protocol. Section 3 discusses the UPnP AV framework design and implement. Section 4 highlights the implementation and the result of UPnP AV framework that can service real-time AV streaming service using real-time protocol. Finally we wrap up with conclusion in section 5.

2. Related Works

The protocols in the application layer interfaces directly to and perform common application services for the application processes. The protocols for multimedia data services like as audio/video among various internet protocols in the application layer are Real-time Transport Protocol (RTP) and Real-time Streaming Protocol (RTSP) [4]. These protocols themselves do not provide mechanisms to ensure timely delivery. They also do not give any Quality of Service (QoS) guarantees but deliver data efficiently.

2.1 RTP

The Real-time Transport Protocol (RTP) defines a good standardized packet format for delivering audio and video