REAL-TIME AUDIO STREAMS SYNCHRONIZING IN MOBILE DEVICES

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ABSTRACT

Real-time audio has been around for some times but applications of it was only used in professional market for transmitting audio via digital data links. Since the advent of smart phones, a new application for this technology is discovered where real-time audio streaming can be used in mobile platforms to create synchronized music playing, where the real-time synchronization is a challenging task. Real-time synchronized playing can be used for sharing the music experience with multiple people, in real-time, thus creating a customized radio station with the clients music. And instead of using one mobile device to play music, by pooling multiple devices in close range can amplifies the audio significantly through the synergy of multiple synchronized playback in multiple devices. We present and discuss – in this paper – an analysis of features of some available products. In our ongoing research we hope to analyze the technologies and concepts available and identify the limitations of real-time synchronous audio playback, hence propose a better solution to overcome the issues in real-time audio synchronization.

***Key words*:** Real-time, Audio Streaming, Synchronization, Mobile

1. INTRODUCTION

With existing technologies such as low latency audio encoding and data distribution systems, real-time audio streaming isn't that complex, since all the primary building blocks required are already present [1]. First a suitable audio source is selected and encoded using a low latency audio codec and then is transported via – preferably a 2.4GHz wireless – network to multiple devices.
For synchronization of the audio transmitted, each receiving device needs using an offset to achieve the effect, this can be said as the default procedure of any real-time audio streaming application [2].

Audio Streaming means, a server constantly transmitting data to some clients. This is achieved using real-time packets, which is a common technique used by the audio and video transmitting applications. The packets are received by the clients and are synced, and audio is reproduced. The complexity of the client's algorithms increases with the number of connected devices to the streaming server, since multiple devices are connected at the same time, thus the network traffic will be increased and buffering will be required to play the audio stream without any loss.

Figure 1 shows an example of a Real-Time Protocol (RTP) [3], it can be used to explain how specifically this is worked out. Incoming packets can be routed to multiple devices using a network protocol, and then the packet is parsed. Its' RTP timestamp is sent to