

NEXTSHARETV: A SET-TOP BOX FOR BITTORRENT-BASED LIVE STREAMING

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ABSTRACT

The distribution of audio-visual content over the Internet has become very popular in recent years. However, due to the bandwidth requirements of videos in high definition, a cost-efficient distribution is desirable. In this paper we present a low-cost consumer electronics set-top box for streaming live video content using cost-efficient P2P networks. The main features of the set-top box include content discovery, high-quality playback, easy user management, and social interaction.

Index Terms— Peer-to-Peer, Set-Top Box, Live Streaming, NextShareTV

1. INTRODUCTION

The distribution of content over P2P networks is today a cost-efficient alternative to traditionally used client-server systems. Especially for TV broadcasters P2P provides an interesting alternative. When TV content is broadcasted by satellite the costs are constant and independent of the number of viewers. However, when the content is broadcasted over the Internet using the traditional client-server model, every viewer increases the bandwidth costs for the TV broadcaster. Thus, the distribution of TV content over P2P systems provides a cost-efficient scalable alternative, as an increased number of users does not increase the distribution costs.

In recent years the Bittorrent protocol has become a very popular P2P protocol due to its scalability and performance. In this paper we describe a low-cost consumer electronics set-top box (STB) called NextShareTV which uses a modified version of the Bittorrent protocol [1] to stream live content to end-user devices like TV sets. In the next section a description of the STB's features is provided.

2. FEATURES OF THE SET-TOP BOX

The STB allows users to stream live TV content provided by the seeding peers of our Living Lab [2] and the other peers in the swarm consuming the same content. It can be connected to multimedia devices using its various

connections (including HDMI, SPDIF, Stereo) and it can receive HDTV content at a bitrate of 2-3 Mbps. An overview of the STB's main features is provided in the following:

- *Content Discovery*: The STB allows users to easily discover the content available in the Living Lab. The users can browse through all available content, add specific channels to their favourites or recommend certain programmes to friends.
- *High Quality Playback*: To ensure that users can consume the content in high quality the STB supports the consumption of high-quality bitstreams. Additionally, metrics like latency, jitter, or stability are monitored to ensure a smooth viewing experience.
- *Easy User Management*: The STB supports multiple user profiles to ensure that the preferences and social profiles of multiple users can be easily managed.
- *Social Interaction*: To ensure that users can share their experience the STB supports a number of social features. All programs can be rated and comments can be posted within NextShareTV. Additionally, Facebook and Twitter are integrated in order to post information about the programmes the users are currently watching.

3. ACKNOWLEDGMENT

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4. REFERENCES

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