Large-Scale Video Application
TD3b-06
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Introduction

In recent years, a new trend has emerged with peer-to-peer (P2P) systems providing a scalable solution for distributing information. Such systems use end-user’s resources to provide a cost effective distribution of bandwidth intensive content to thousands of users.

In a P2P network these resources are shared among equals and there is little or no central server managing the network. Nodes in the network play the role of both a client and a server. Because each node contributes resources, the capacity of the system grows as the demand increases, resulting in limitless system scalability. The bandwidth capacity of the system increases as more nodes arrive. Therefore, the server does not need to increase its resources to accommodate the larger user population.

Aim and Objective

With this insight, this project aims at developing a P2P application which can provide a smooth real time video streaming service through the internet by sharing the information packets.
**Methodology**

**Network Coding**

This project will implement the network coding scheme to improve the throughput utilization of a network topology.

**Network coding properties:**
- Error correction guarantee.
- Single direction communication.
- Multiple data sources.
- Fully utilize the channel capacity.

**Encoding process:**

\[ F = \sum_{i \in N} C_i X_i \]

**Delivery process**
Peer C can help Peer B

**Source**

- [Diagram showing source block and encoded block]

**Encoded Block**

- [Diagram showing generation matrix and encoded block]

**Decoding process:**

- [Diagram showing source block and encoded block]

- [Diagram showing inverse of generation matrix and source block]
Results

Server Side

The packets stream out from my own developed HTTP video streaming server.

Peer Side

- User Channel Web Interface
- UST P2P Connection Interface
- Playing in Window Media Player