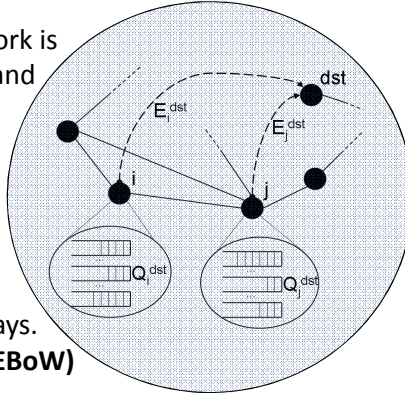


# A Demonstration of Video over an IEEE 802.11 compliant version of the Enhanced-Backpressure algorithm

## Introduction

The efficiency of a wireless mesh network is directly related to the applied **routing** and **scheduling** policy.

- **Backpressure (BP)** is a throughput optimal centralized routing/scheduling scheme.
- **Enhanced-Backpressure (EBP)** is an improved version that reduces e2e delays.
- **Enhanced Backpressure over WiFi (EBoW)** implements the EBP aspects in a decentralized manner that is compatible with WiFi networks.



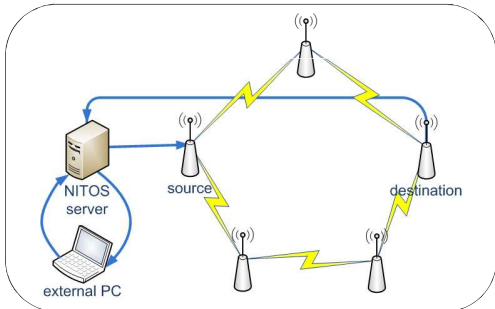
## EBoW Design

- **No explicit path computation** from source to destination.
- Existence of a **set of network-layer queues**, while each queue corresponds to a specific destination.
- Transmission of a packet from the queue and to the neighbor, that maximizes the sum of the **positive differential backlog** ( $Q_i^{dst} - Q_j^{dst}$ ) and the **non-negative differential distance** ( $E_i^{dst} - E_j^{dst}$ ).

As a result: Throughput efficient load-balancing routing retaining low e2e delay.

## Implementation & Demo Setup

- Implem/ation based on the **Click Modular Router & Roofnet SRCR configuration**.



Blue arrows indicate the video stream and yellow ones the wireless connectivity.

## Phases of Demo

Video streaming of the well-known *foreman* sequence, using **UDP/RTP/H.264**.

Simultaneously, an **Iperf** high traffic stream runs from the upper node to destination, overloading the former one.

1. Use of the state-of-the-art shortest-path routing (**SRCR**) algorithm and the CSMA scheduling policy. Video stream is forwarded through the shortest (but overloaded) path.
2. Use of the **EBoW** routing/scheduling scheme. Now, video stream uses both alternative paths.

## Graphical Monitor

A **Graphical Java Monitor** is TCP connected with the **Click** generated control sockets of each node. The sockets inform the monitor about the whole state of the routers, and the monitor depicts this information.

## Video Quality Perception



**EBoW and SRCR snapshots** (1st & 2nd column respectively)