

ENSC 427: COMMUNICATION NETWORKS

SPRING 2012

Final Project Presentation

Quality of Service Analysis of Video Conferencing over WiFi and Ethernet Network

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Introduction

- Company uses video conferencing for nationwide meetings
- Comparison between WiFi and Ethernet connections
 - Evaluate the performance of video conferencing over those two networks

Introduction

What is Quality of Service (QoS)?

- End-to-End Delay
- Packet Delay
- Packet Received & Sent
- Throughput

OPNET Implementation

- OPNET 16.0

- Office Location Setting:

 - Calgary to Vancouver

 - Toronto to Vancouver

- Video Setting:

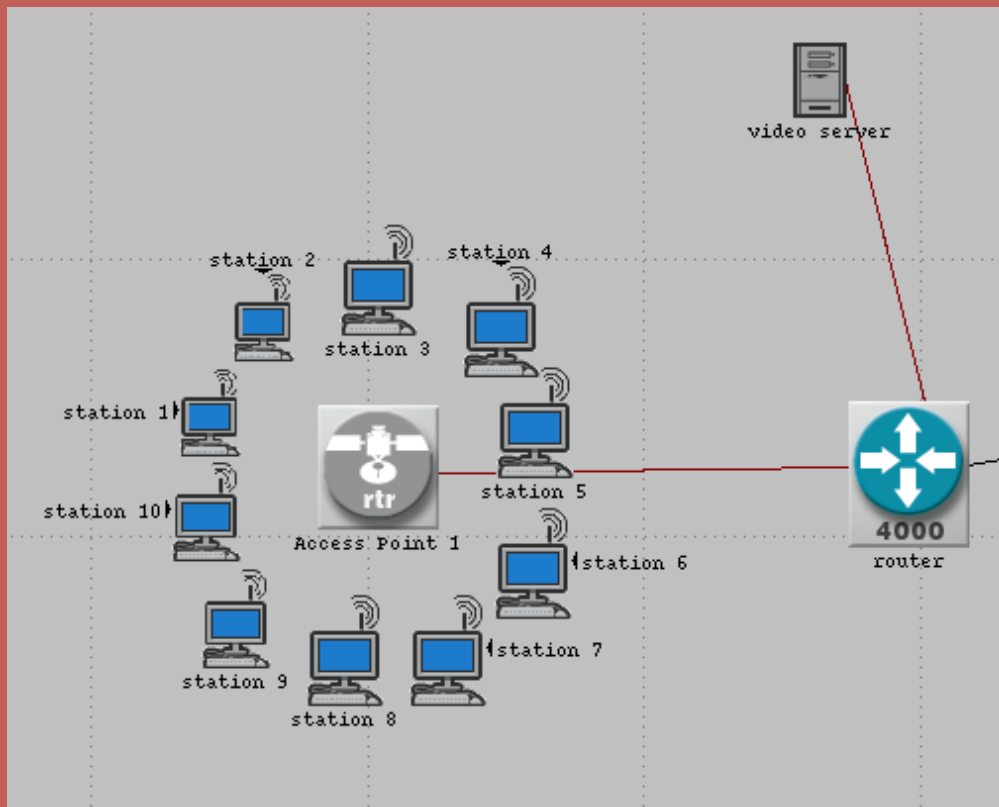
 - Low Resolution

 - 128x120 pixels

 - 10 frames/sec

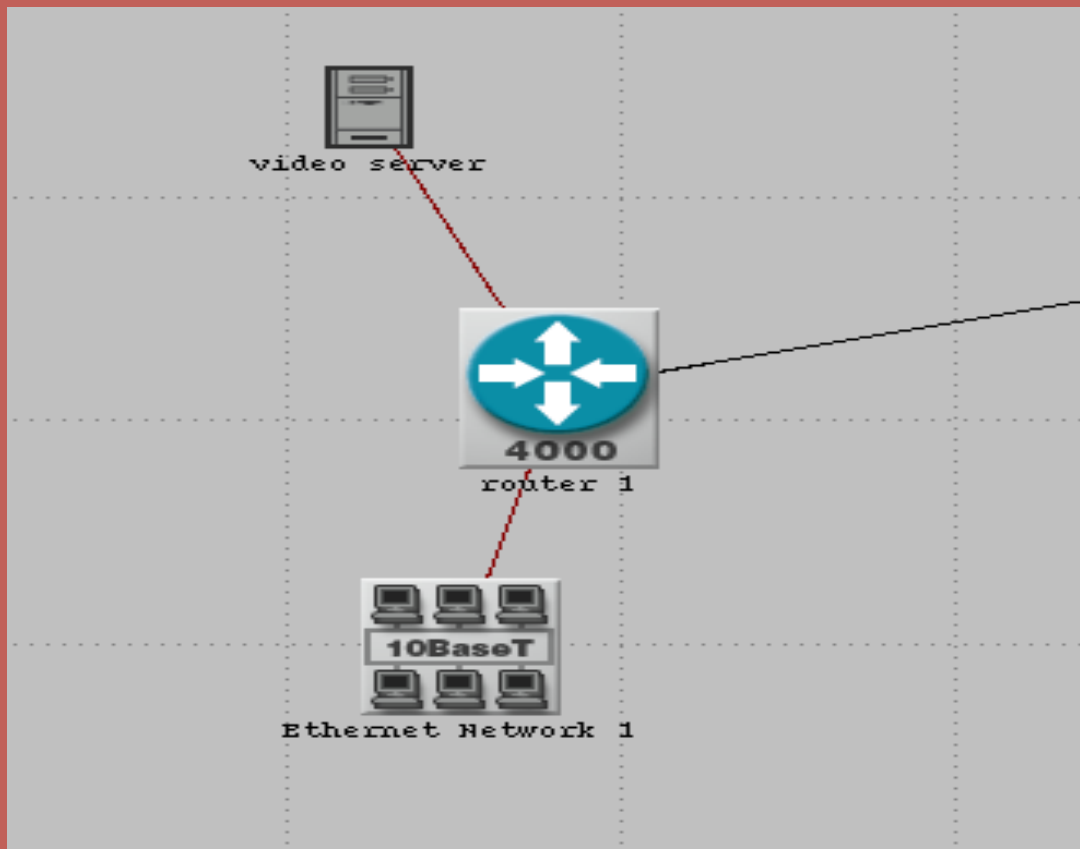
OPNET Implementation

WiFi Network:



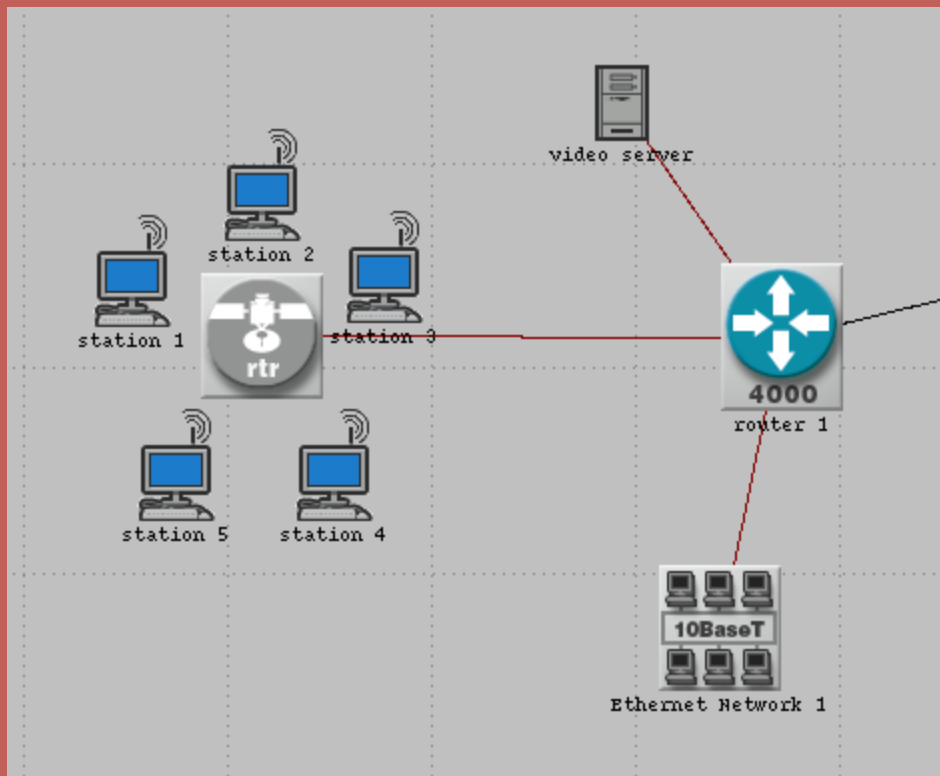
OPNET Implementation

Ethernet Network:



OPNET Implementation

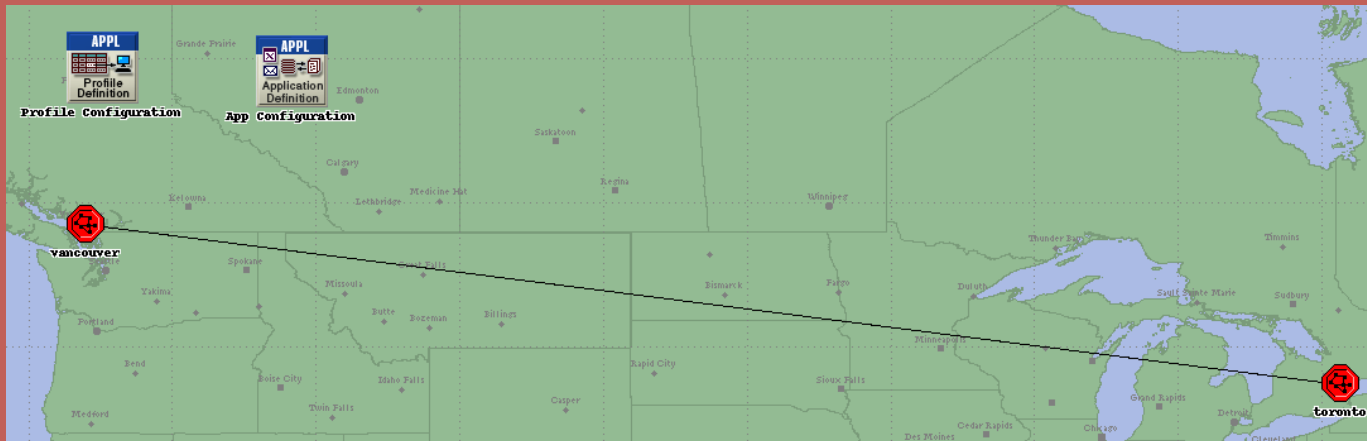
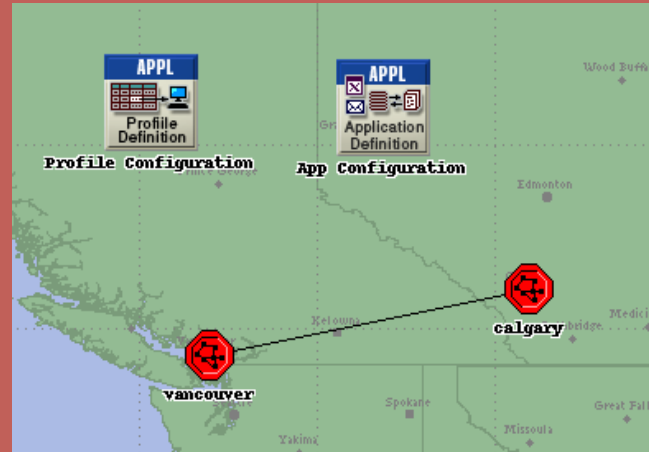
Ethernet & WiFi Network:



OPNET Implementation

From Calgary to Vancouver

From Toronto to Vancouver



OPNET Implementation

Simulation Cases

Case #	Network	WiFi Users	Ethernet Users	From	Simu. Time
1	1 & 2 *	Equal	Equal	Calgary	15 mins
2	1 & 2 *	Equal	Equal	Toronto	15 mins
3	1 & 2 *	Unequal	Unequal	Calgary	10 mins
4	3 *	Equal	Equal	Calgary & Toronto	15 mins
5	3 *	Unequal	Unequal	Calgary	15 mins

Notes*

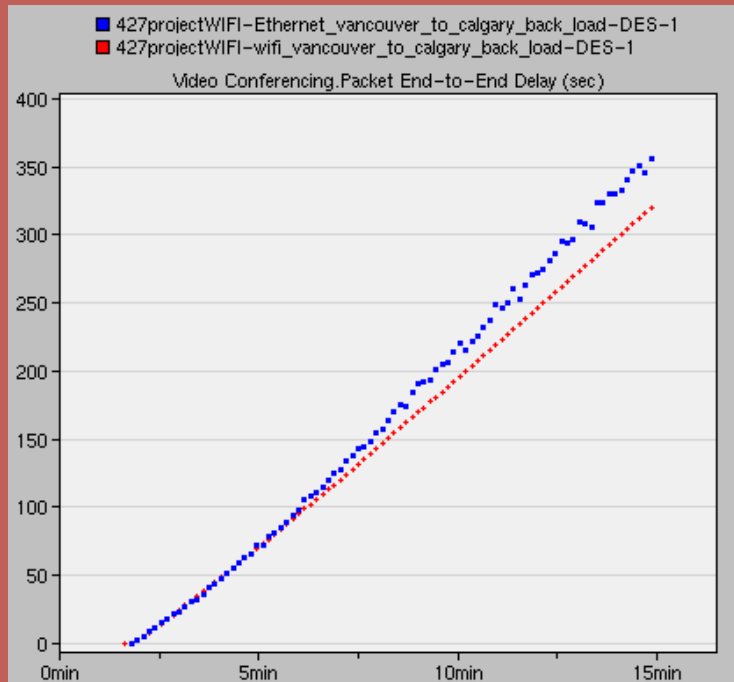
Network 1: WiFi network

Network 2: Ethernet network

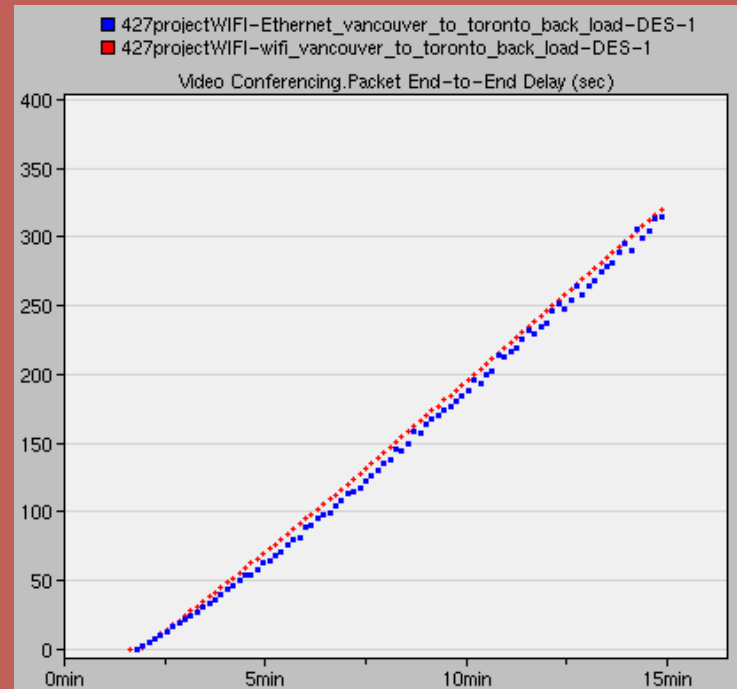
Network 3: Mixed WiFi & Ethernet network

Simulation Result

Case 1 & 2: Packet End-to-End Delay



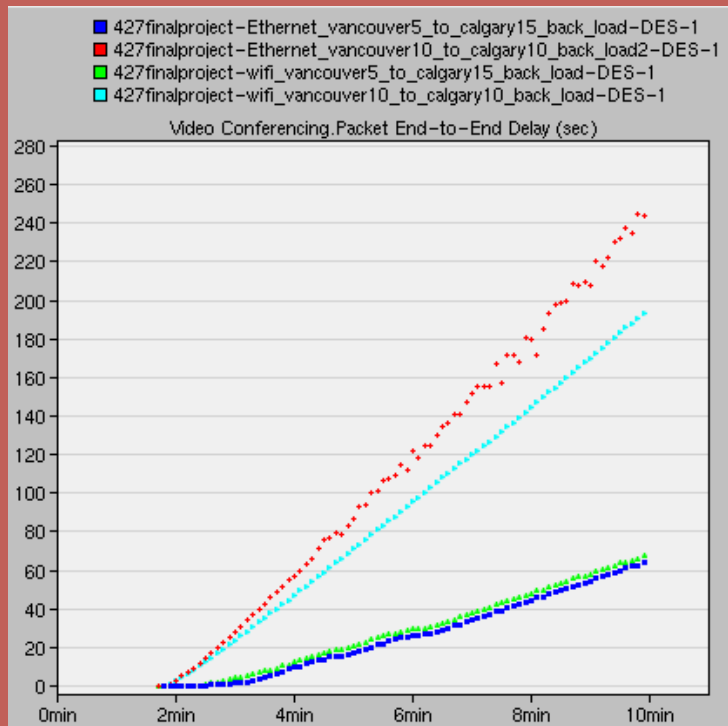
Case 1



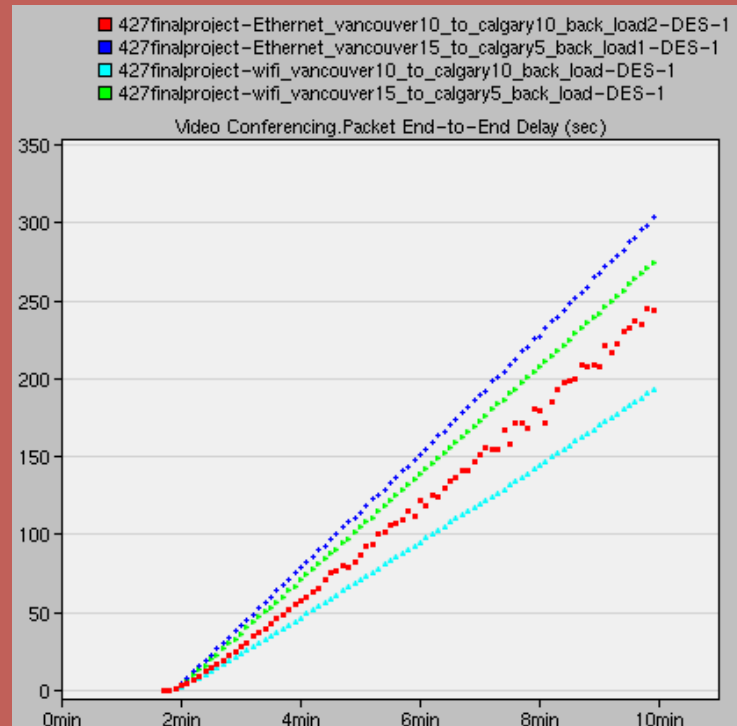
Case 2

Simulation Result

Case 3: Packet End to End Delay



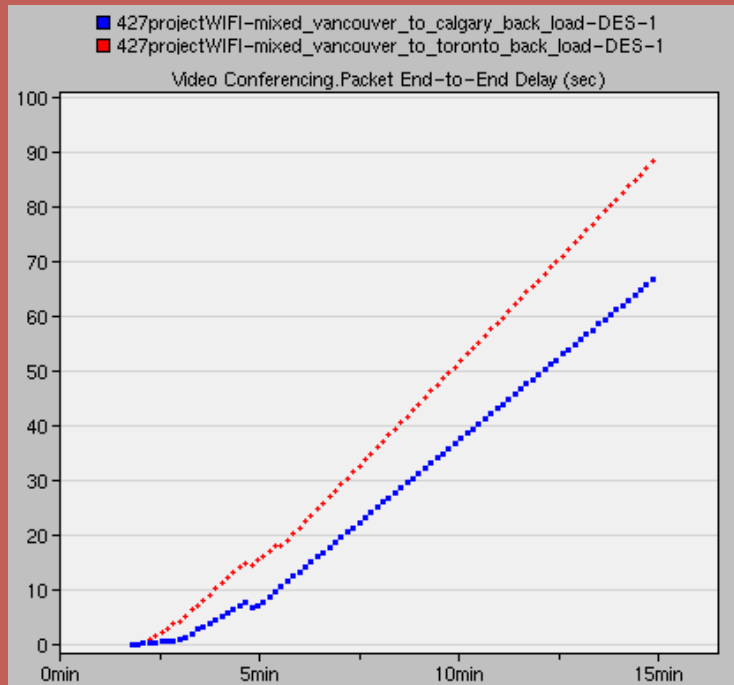
Vancouver: 10 Calgary: 10
Vancouver: 5 Calgary: 15



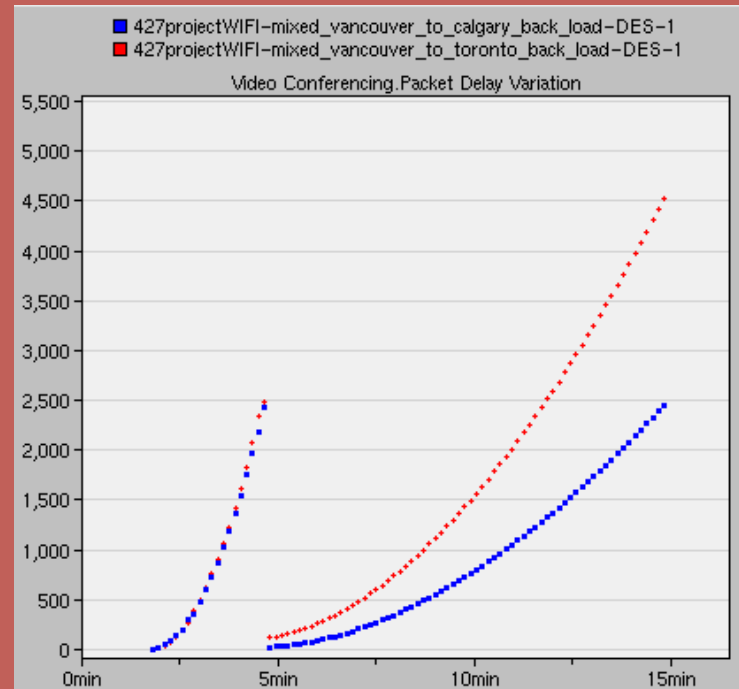
Vancouver: 10 Calgary: 10
Vancouver: 15 Calgary: 5

Simulation Result

Case 4: Packet End-to-End Delay



Packet End to End Delay



Packet Delay Variation

Expectation/Conclusion

Which one is best?

- Case1&2: Distance does not effect delay
- Case3: Delay increase as Vancouver users increase
- Case4 (mixed network): Distance effect delay

Future Work

■ Model more realistic networks

- Include FTP, Email, Web Browsing and more

■ Simulate other networks

- Worldwide Interoperability for Microwave Access (WiMAX)
- Long Term Evolution (LTE)

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Thank You! 😊

Questions?

