ENSC 427
Communication Networks
Spring 2012
Analysis of VoIP
(Voice over Internet Protocol)

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http://www.sfu.ca/~ypa11/Ensc%20427/427.html
Overview

- Introduction
- Scenario cases
- Results analysis
Voice over Internet Protocol

- Start 1970s
- Transmit voice and multimedia over packet switched network
- Operate Over Internet Protocol
- Alternative to public switched telephone network (PSTN)
- Allows call to be make over non phone device
VoIP vs. Tradition Calls

- Cost
- Quality
- Reliability
Introduction

- Project motivation
  - Increasing popularity of VoIP

- Project overview
  - Performance of VoIP between wire and wireless connection
  - Compare and analysis the QoS parameter between scenarios
Scenario Cases

- Scenario
  - Two-Floor Office
    - Local Lan Call
    - Wlan Local Call
    - Wlan with interference
  - Two location locate across Canada
    - Wlan Long Distance
    - Ethernet Long Distance
Analysis Parameters

- Jitter
- Mean Opinion Score Value (MOS Value)
- End to End Delay
- Delay Variation
Simulation Setup

- WLAN 802.11g connection using 56Mbps
- G.711 encode scheme
- 1 voice frame / packet
- Best effort
- One minute /call and total simulation of 5 calls in total
LAN Local call
Scenario

- WLAN Local Call
Scenario

- WLAN call with interference from same frequency devices
Scenario – Long Distance Call

- Long distance call for LAN and WLAN
- Continental Size
Future Work

- Multiple access of switch (FTP, Printer server, Http server and Email Server)
- G.729 comparison
- WiMax over WiFi
- Conference Call across the Globe
Results – Jitter (Local Call)

Blue – Ethernet Connection
Red – Wireless Connection
Results – Jitter (Long Distance Call)

Blue – Ethernet Connection
Red – Wireless Connection
Results – Jitter (Wifi connection with interference)

Blue – Wireless Connection with interference
Red – Wireless Connection

average on VoIP application Jitter (ms)

Time (s)
Results – ETE Delay (Local Call)

Blue – Ethernet Connection
Red – Wireless Connection
Results – ETE Delay (Long Distance Call)

Blue – Ethernet Connection
Red – Wireless Connection
Results – ETE Delay (Interference)

Blue – Wireless Connection with Interference
Red – Wireless Connection
Delay Variation
Delay Variation

Red – Wireless Connection with Interference
RESULTS – MOS VALUE

[Graph showing MOS values]
RESULTS – MOS VALUE
**Conclusion**

- Ethernet has a more stable and less delay connection than wireless connection.
- Interference near wireless router greatly reduce QoS.
- Distance VoIP introduce greater jitter, ETE and lower MOS.
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