

# ENSC 427: Communication Networks

Spring 2011

Final Project Presentation

## Voice over Internet Protocol over WiMAX

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# Roadmap

- Introduction
- Background Information
- Implementation
- Discussion
- Conclusion
- References

# Introduction

- Project Idea
  - Performance of VoIP over WiMAX
  - Environmental factors
  - Alternative to traditional telephone?

# Introduction

- Motivation
  - Popularity of VoIP
  - Availability of WiMAX
  - Coverage range
  - Data rates

# Background Information

- Voice over Internet Protocol (VoIP)
  - Transportation of voice/multimedia
  - Internet Protocol
  - Alternative to PSTN (Public Switched Telephone Network)

# Background Information

- Worldwide Interoperability for Microwave Access (WiMAX)
  - IEEE 802.16 - Telecommunication Protocol
  - Alternative to 3G network
  - Present: 40Mbit/s, 50km
  - Future: Mobile nodes - 100Mbit/s  
Fixed nodes - 1Gbit/s

# Background Information

- Related Work

- Analysis of VoIP Performance on Wi-Fi
- Streaming Video Content over WiMAX

# Implementation

- Voice Encoding Scheme

- G.729a

- Modulation

- QPSK

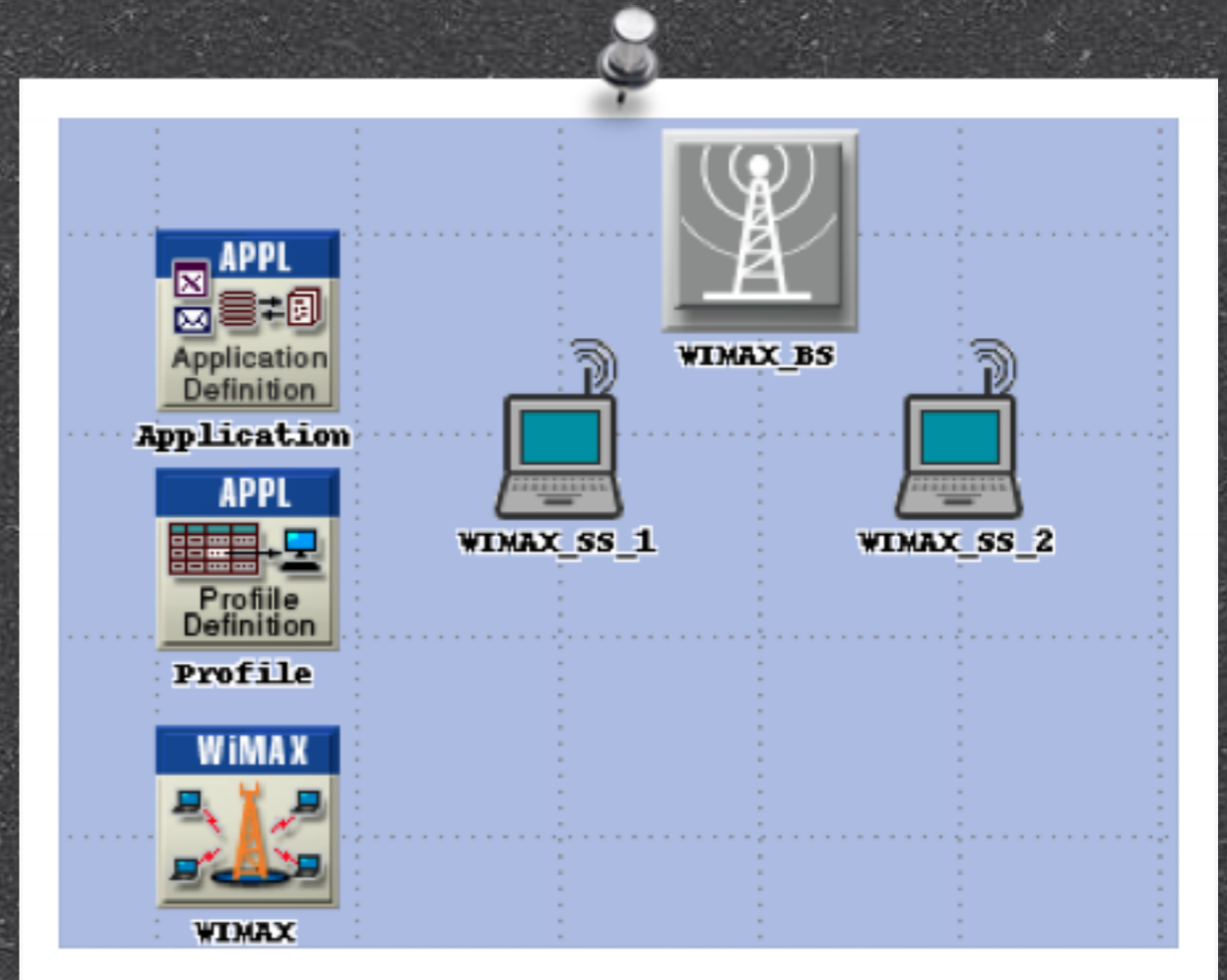
- Simulation Length

- 10 minutes



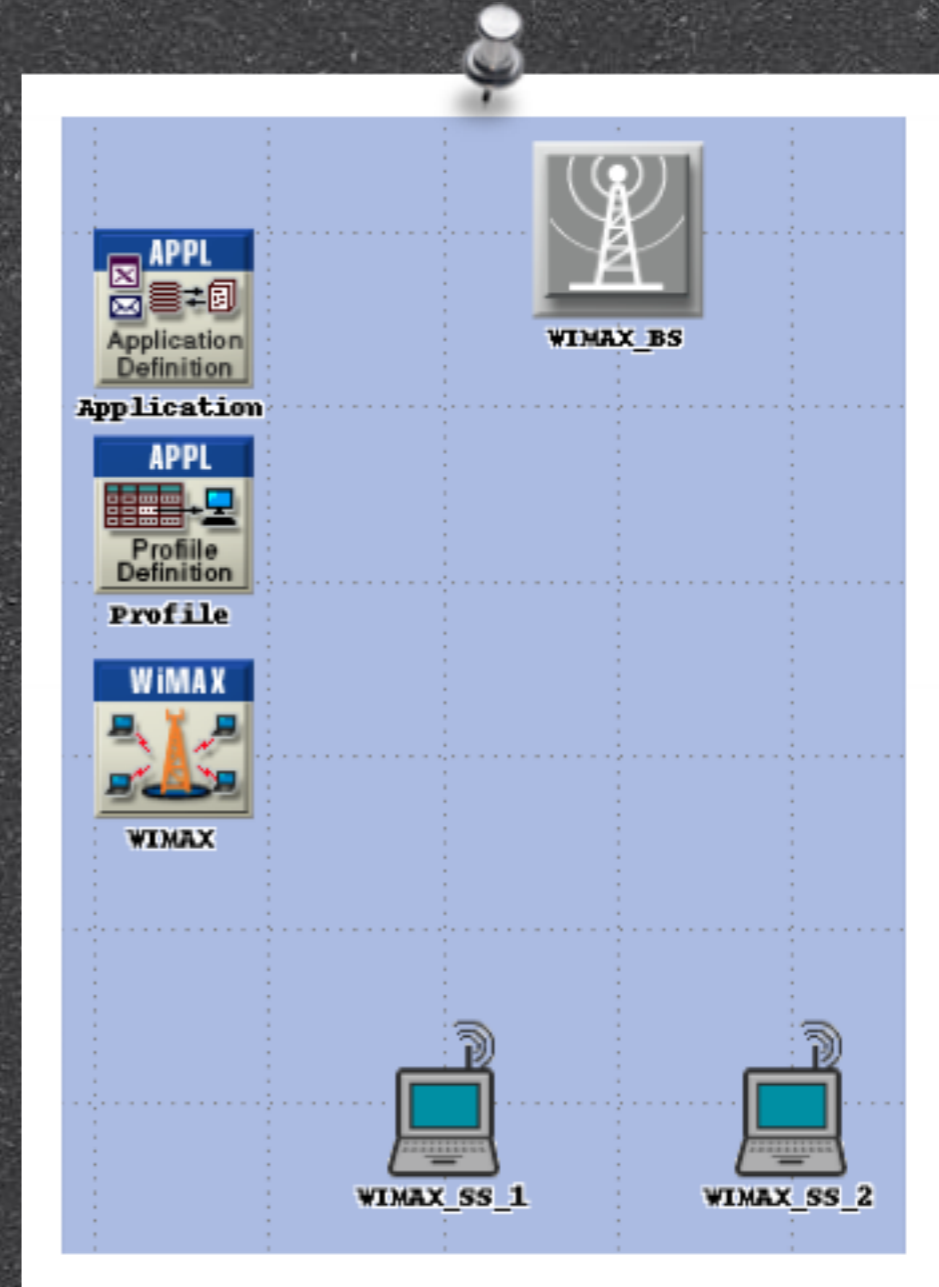
# Implementation

- Scenario 1
  - Fixed Nodes
  - Within Range



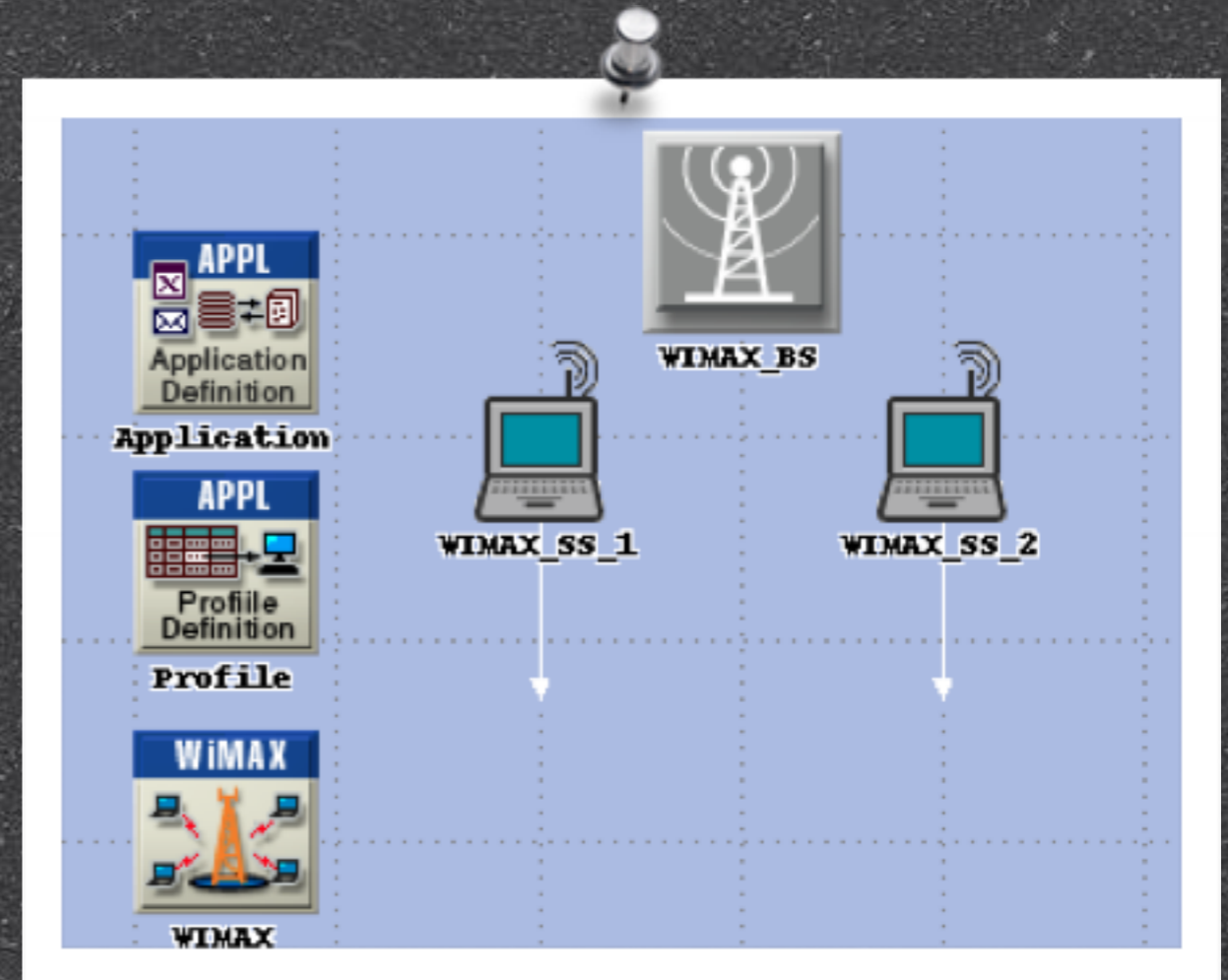
# Implementation

- Scenario 2
  - Fixed Nodes
  - Outside Range



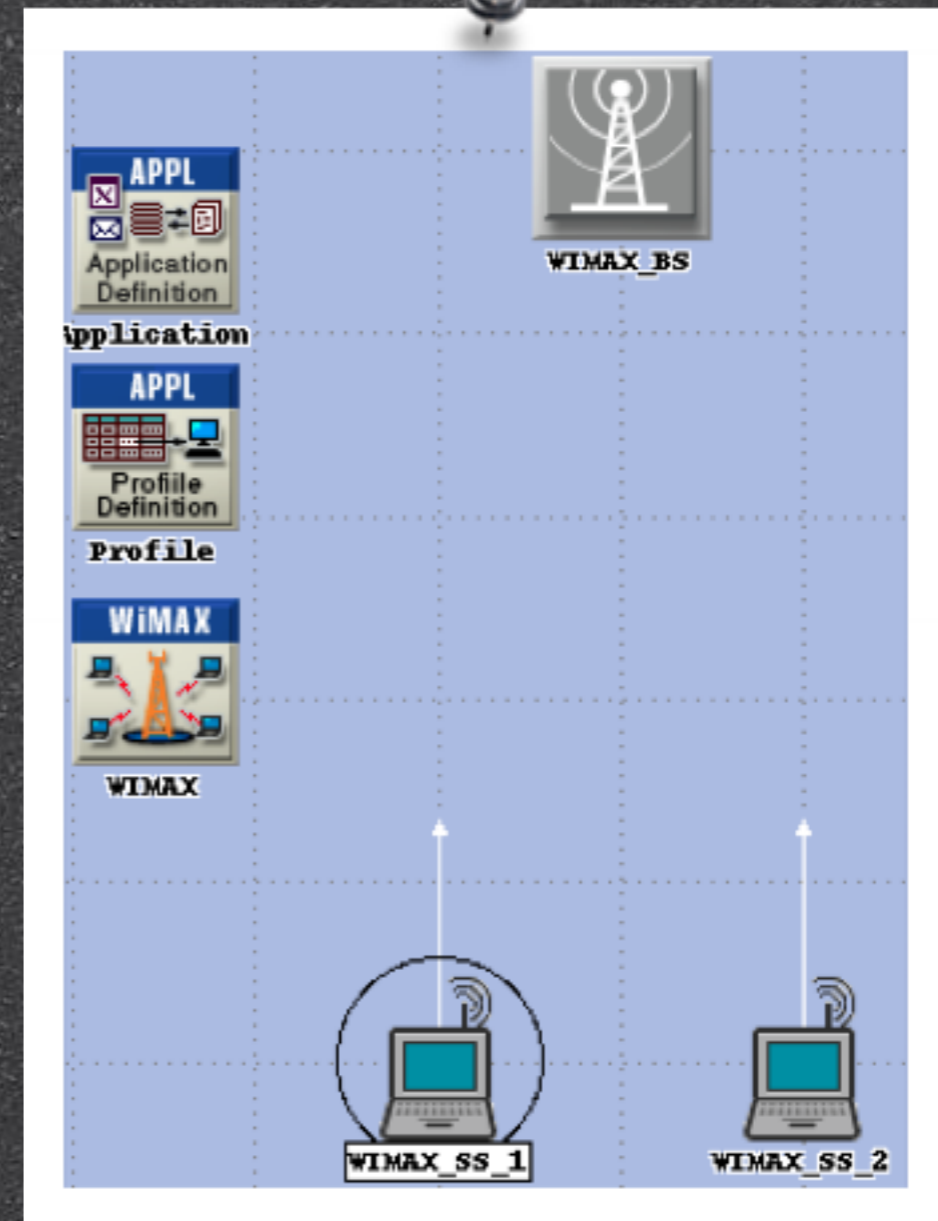
# Implementation

- Scenario 3
  - Mobile Nodes
  - 100km/h
  - Within Range

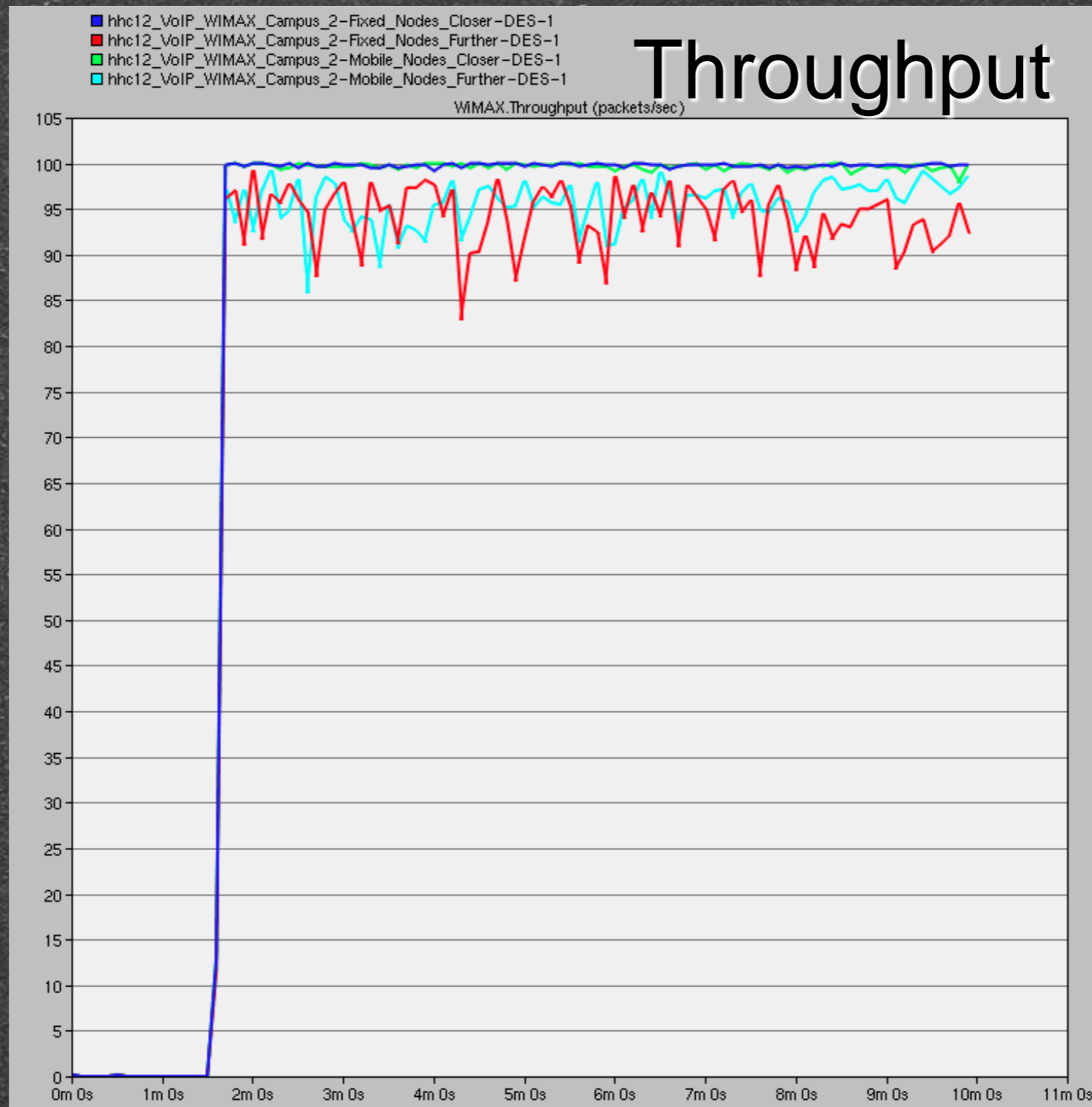


# Implementation

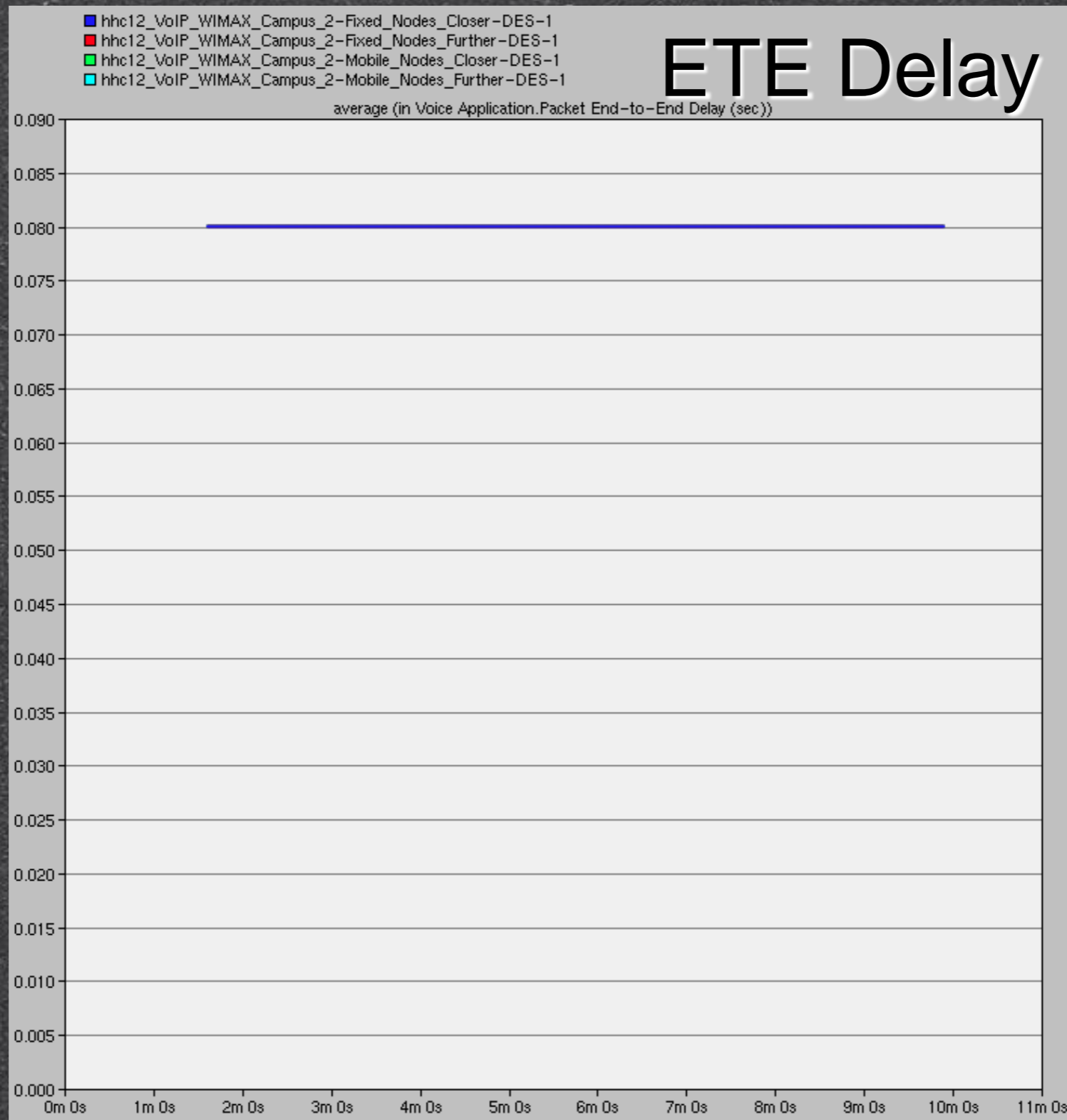
- Scenario 4
  - Mobile Nodes
  - 100km/h
  - Outside Range



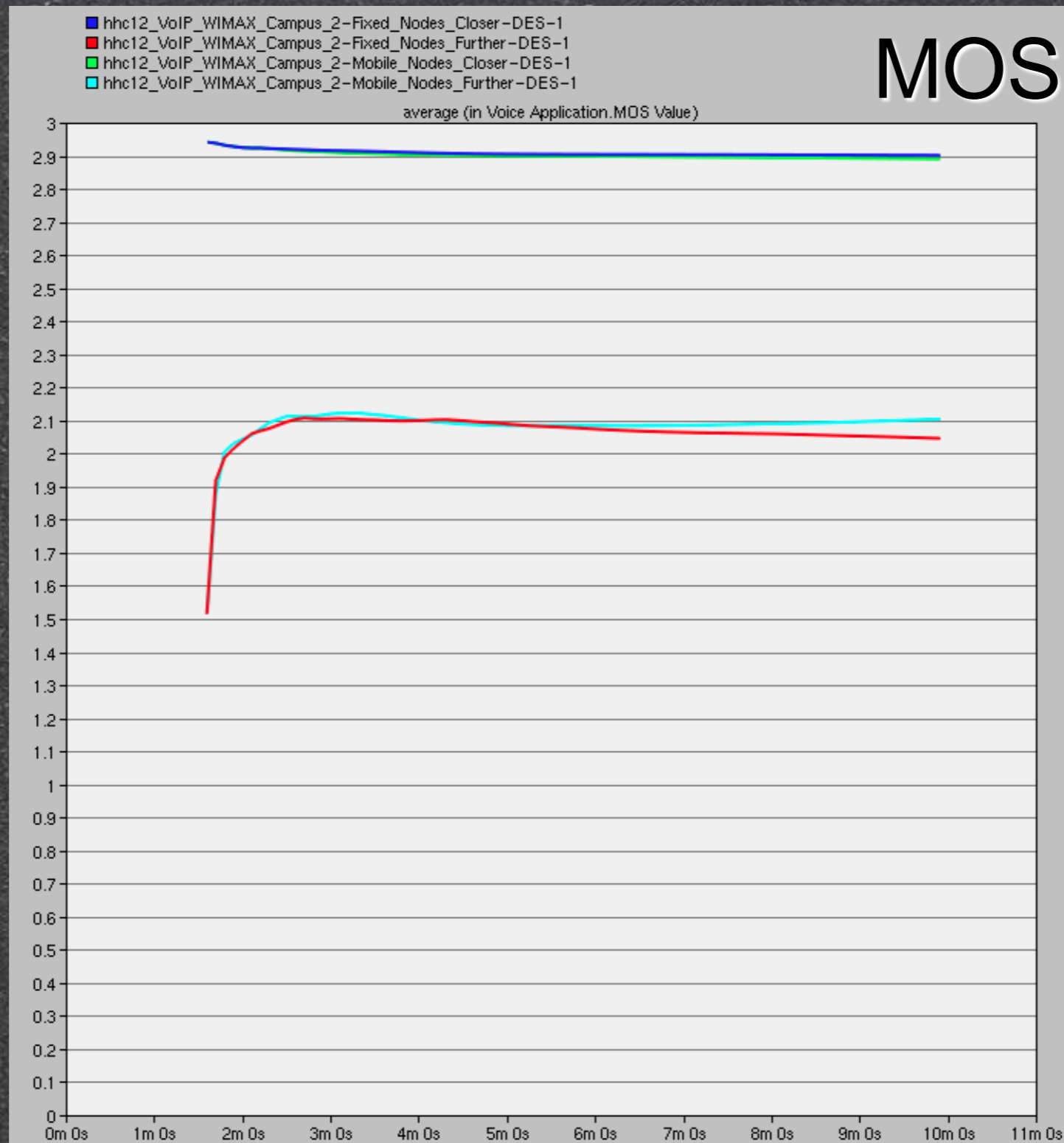
# Discussion



# Discussion



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# Discussion

## • Difficulties

- No UMTS licenses on Opnet
- Lack of information on transmission power

## • Future Work

- Different types of communication
- More parameters variations
- Background traffic



# Conclusion

- Performance would not be affected due to the speed of the mobile nodes
- Distance of the mobile nodes do not affect much on the performance as long as they are in range

# References

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# References

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Thank You