ENSC 427: Communication Networks
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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

Throughput
Discussion

ETE Delay
Discussion

MOS

![Graph showing MOS values over time](image-url)
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


References


Thank You